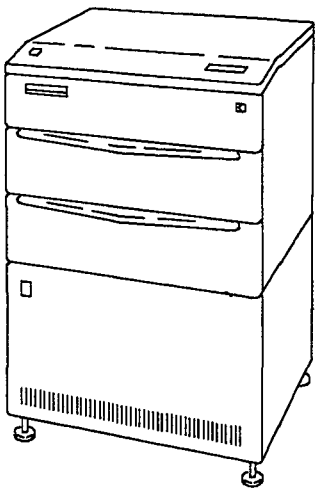
Publication No. 5B9620
31OCT95
Supersedes 4B4850
4/94

User's Manual

for the

KODAK EKTASCAN 1120 Laser Printer



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HEALTH IMAGING SYSTEMS

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Table of Contents

Description	Page
Safety Information	1-1
Product Overview	2-1
About the Printer	2-2
Component Overview	2-4
Control Panel	2-4
Keypad	2-6
Auxiliary Keypad	2-9
Footswitch	2-12
Basic Operations	3-1
Start Up and Shut Down	3-2
Start Up	3-2
Shut Down	3-2
Information Saved	3-3
Film Types	3-4
Film Handling	3-5
Overview	3-5
Loading Unexposed Film	3-9
Changing Film Size	3-12
Unloading Exposed Film	3-14
Transport	3-16
Storing and Printing Images	3-18
Position Store Keys	3-18
Storing Images	3-18
Formats, Reverse Image Setting, and Number of Copies	3-19
Printing Pages	3-24
Autoprinting	3-24
Deleting Images and Pages	3-25
Deleting Images	3-25
Deleting Pages	3-25
"Program" Options	4-1
Overview	4-3
Uses	4-3
Entering the Program Mode	4-3
Window Options	4-4
Overview	4-4

Description	Page
Window Width	4-4
Window Level	4-5
Curve Shape	4-6
Curve Series	4-7
Print Options	4-9
Overview	4-9
Interpolation Types	4-9
Border Option	4-10
Contrast Option	4-11
Configuration	4-15
Overview	4-15
Auto Print	4-15
Audio Option	4-16
Rotation Option	4-18
Control Terminal	4-20
Overview	4-20
The Main Menu	4-21
Reaching the Main Menu	4-22
Procedure	4-25
Operational Mode	4-26
Store Images	4-26
Print a Page	4-26
Change Format	4-27
Number of Copies	4-27
Delete an Image	4-27
Delete a Page	4-27
Rotation	4-27
Interpolation Type	4-27
Polarity	4-27
Image Setup	4-28
Common Text	4-29
Revising Text	4-29
Deleting Text	4-29
Troubleshooting and Error Codes	4-30
Calibration and Tone Scaling	5-1
Calibration	5-2
Overview	5-2
Calibrating - Using A Stored Table	5-4
Calibrating - Creating a New Calibration Table	5-8
Calibration Errors	5-15
Tone Scaling	5-16

Description	Page

Troubleshooting 6-1
Access Mode 6-2
Using the Access Mode 6-2
Film Jams 6-4
Error Messages 6-4
Clearing a Film Jam 6-5
Errors 6-9
User-Correctable Problems 6-9
Keypad Error Messages 6-11
Printer Error Messages 6-12
Control Panel Menu Flowcharts 7-1
Glossary 8-1
Index 9-1
Publication History 10-1

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SECTION 1
Safety Information

IMPORTANT

Read all instructions before using the Laser Printer.

WARNING

- **Because the imaging sections of laser printers (imagers) are designed differently, the printed image size displayed on film (media) will differ among models of laser printers. External measuring devices such as templates, scales, rulers, or reference point charts used for charting anatomical locations or measuring point to point should not be used in the diagnosis or treatment of patients unless differences among the printed image sizes of laser printers has been taken into consideration.**

- This equipment should not be located in the patient vicinity.

- LASER BEAM. This equipment employs an invisible laser. Laser radiation is present when the machine is operated with the side Panels off and the interlocks defeated. Avoid direct exposure to the Laser Beam.

- HIGH VOLTAGE. This equipment is operated with hazardous voltage which can shock, burn, or cause death. Remove the wall plug before servicing equipment. Never pull the cord from the outlet. Grasp the plug and pull to disconnect. DO NOT operate equipment with a damaged power cord. Position the power cord to avoid tripping or being accidentally pulled from the outlet.

- RADIATION. Use of controls or adjustments, or performance of procedures other than those specified herein may result in hazardous radiation exposure.

- DO NOT use an extension cord to power the Laser Printer. Connect this equipment to a grounded outlet. Refer to the KODAK

EKTASCAN 1120 Laser Printer Site Specifications, Publication Number 968355, for additional details.

- Side Panels shall be removed and the interlocks bypassed by authorized service personnel only.

CAUTION

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to be exempt from the limits for a Class A computing device pursuant to Part 15, Subpart B of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential environment is likely to cause interference, in which case the user, at the user's own expense, is required to take whatever measures may be required to correct the interference.

NOTE

Noise emission is less than 70 dBA.

SECTION 2
Product Overview

Table of Contents

Description	Page
About the Printer	2-2
Component Overview	2-4
Control Panel	2-4
Keypad	2-6
Auxiliary Keypad	2-9
Introduction	2-9
Display Mode	2-10
Active Keypad Mode	2-11
Footswitch	2-12

About the Printer

The KODAK EKTASCAN 1120 Laser Printer is one printer in the family of Kodak Laser Printers and Imaging Systems. Using the 1120 Laser Printer, you can record images from Magnetic Resonance Imaging Devices, CT Scanners, and a host of other imaging devices, and then print high-quality films of those images.

The 1120 Laser Printer provides a choice of unloading film to either a receive magazine, which you remove from the printer for darkroom processing, or directly to a film processor for automated processing with minimum film handling.

Designed with efficiency in mind, the 1120 Laser Printer offers the following features and more:

- Prints on up to 4 film sizes
- Provides automatic film exposure and handling
- Has a fast print cycle time, which means you can print a high number of images in a short period of time
- Has operator adjustments for calibration, contrast, density, and curve shapes

The 1120 Laser Printer is equipped with an interactive Control Panel. This Control Panel displays printer status messages and allows you to perform a full range of functions such as calibration, and printer customization.

The printer may also include a Keypad. The Keypad is a convenient way to perform most printer functions using easy to follow menu-driven displays.

If a Keypad is connected to your printer, you can use the Keypad to

- Select one of several image-store sequences
- Choose a format for the printed images
- Choose the number of originals you want to print

If a Keypad is connected, you may also have an optional footswitch that you can use to store images instead of pressing the STORE bar on the Keypad.

If your imaging device supports autofilming, the device sends commands directly to the printer, so you may be supplied with an

Auxiliary Keypad or Control Terminal. In this case, you can use a Control Terminal to supplement existing autofilming commands.

Before using the Laser Printer, familiarize yourself with the information in this guide.

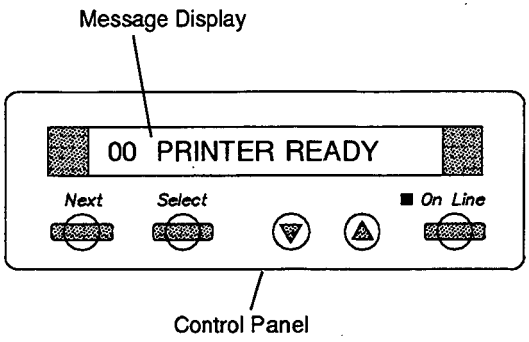
Component Overview

Control Panel

The following information explains the basic functions of the Control Panel and the Magazine Open/Close and Access Switches on the Laser Printer. The fold-out "Quick Reference Guide" (Publication Number 968354) is located at the back of this manual. The "Quick Reference Guide" illustration of the Control Panel and Keypad may be extended and positioned beside this information to help locate specific items being described.

Message Display	This LCD displays user messages. For example, system status, warnings, or error information about overall Printer functions.
Next	When the Printer is off-line use this button to scroll through the options of calibration, printing a calibration image, and selecting the film output to the Receive Magazine or the Processor.
Select	Use this button to select the option that is displayed.
▼ and ▲	Use these arrows to decrease or increase the values entered for calibration and density.
On Line	Use this button to change the Printer status. A green LED is illuminated when the Printer is on-line. Use the off-line status to: • enter calibration mode and set density, • print the calibration image, • specify film destination to the Receive Magazine or the Processor.
Magazine Open/Close Switch	Use this switch to access the Magazines. The light blinks while the Windows are moving. When the light is off, the Doors can be opened and the Windows are closed; when the light is on, the Doors are locked and the Windows are open.

Access Switch Use this push button switch to unlock the Magazine Doors and to access the Printer's imaging section to clear film jams. Also, power is removed from the imaging unit.



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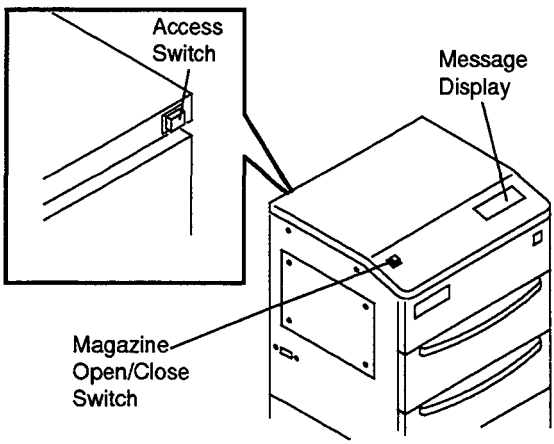

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Keypad

For Printers **NOT** configured with an autofilming link, use a Keypad to enter commands to store and print images.

If a Keypad function is not available when the key is pressed, an "Invalid Key" tone sounds.

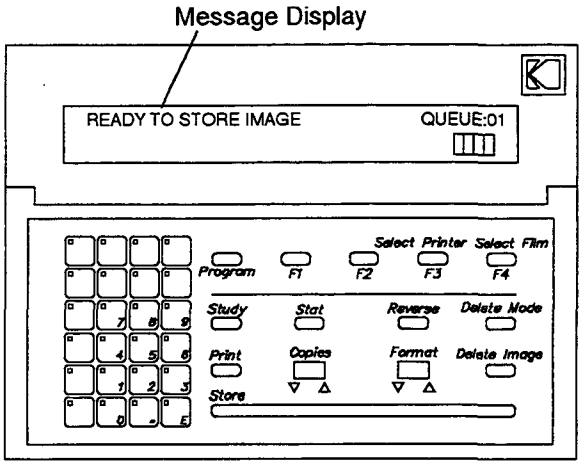
Message Display Messages are displayed on the Keypad in four areas:

(1) **top left** - displays system status, such as "READY TO STORE IMAGE."

(2) **top right** - displays the number of pages remaining in the queue.

(3) **bottom left** - displays information for a process; for example, an image has been deleted.

(4) **bottom right** - displays the film supply level. If one or more boxes appear, the Printer has 10 or more sheets of film in the Supply Magazine. As the film level drops below 10, the Keypad displays "FILM SUPPLY LOW" and finally "FILM SUPPLY EMPTY."



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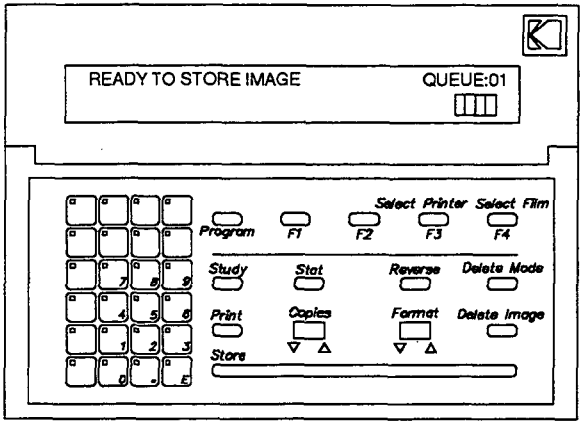
Numeric Keypad The left side of the Keypad functions both as Numeric Keypad and Position Store key. The Numeric Keypad is backlit only when in the Program Mode. When the Keypad is used as Position Store keys the LEDs display:

- green, which indicates a position is available for storage,
- flashing green, which selects the next default store position,
- flashing red, which indicates an image is being stored,
- red, which indicates a stored image position.

Store Use this bar to store an image into the next default position.

Print Use this key to send a page of images to the print queue. A format does not need to be filled for this key to work; as long as at least one image has been stored, the page can be sent to the print queue.

Copies Display ▼ **and** ▲	Use these arrows to change the number of copies requested for a page of images. Copies must be set before requesting a print.
Format Display ▼ **and** ▲	Use these arrows to scroll through the format options to change the format for a particular page. The format cannot be changed after storing an image without deleting or printing the page.
Reverse	Use this key to change the image polarity between normal and reverse ("blackbone"). This feature can be changed from image to image.
Stat	This function is not available with the 1120 Laser Printer. An "Invalid Key" tone sounds if this key is pressed.
Delete Image	Use this key to indicate an image is to be erased. After it is pressed, you must indicate which image should be erased.
Delete Mode	Use this key to indicate that a page of stored images is to be erased.
Program	Use this key to access functions such as Window Options, Print Options, and Configuration Options. For further information about these items, see the "Program" section of the manual on page 4-1.
F1 through F4	Use these function keys primarily in Program mode. The system prompts you as necessary.
Select Printer	This feature is available on the 1120 Laser Printer. It will allow the selection of another printer on the network, if a KODAK Network Interface is installed in the printer.
Select Film	Use this key to scroll through the available film sizes and specify which film size is used to print the images.
Study	This function is not available with the 1120 Laser Printer. An "Invalid Key" tone sounds when the key is pressed.



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Auxiliary Keypad

Introduction

The auxiliary keypad is a standard keypad that is used with an autofilming link. The auxiliary keypad is available to some autofilming imaging devices. With certain imaging devices, the keypad functions in Display Mode only. In others, the user may switch from Display Mode to Active Keypad Mode.

These two modes are discussed in the following paragraphs.

NOTE

Consult your Kodak representative for the modes that are available with your imaging device.

Display Mode

When the auxiliary keypad is attached in addition to the autofilming link, and the laser printer and imaging device are powered on, the following screen could appear on the keypad display.

```
DISPLAY MODE                QUEUE:00
F2 TO SWITCH CONTROL
```

If the F2 Key is not pressed, the autofilming link controls the laser printer. The keypad acts only as a display.

The keypad will display

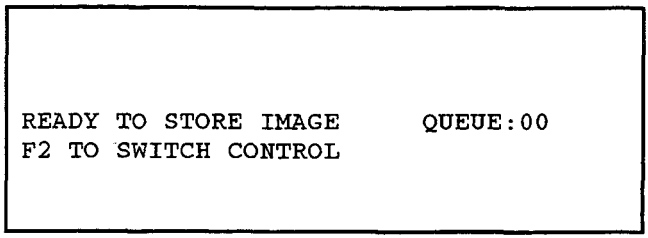
- printer messages
- error messages
- queue status
- film supply quantity
- the image map
  The map will show the current page layout or where the images have been stored within this layout. The map will indicate stored images in red and open store positions in green.
- the LED window below the COPIES
  This LED will indicate the number of multiple originals to be printed.
- the LED window below the FORMAT
  This LED indicates the present format number.

NOTE

When changes are made at the imaging device, the keypad is updated when the imaging device sends the information to the printer.

Active Keypad Mode

By pressing the F2 key to make the keypad active, the following screen is displayed.



The keypad features are

- Store
  availability depends on the imaging device
- Print
  availability depends on the imaging device
- Delete Mode
  availability depends on the imaging device
- Delete Image
  availability depends on the imaging device
- Study
  Not Available
- Reverse
- Copies
- Format
  availability depends on the imaging device
- Program
- Select Printer (F3)
- Select Film (F4)
- Footswitch support

NOTE

If a particular feature is not available, the unit will beep when you try to access the feature.

NOTE

Pressing F2 again will return you to the Display Mode screen.

Footswitch

The Footswitch connects directly to the back of the Keypad and functions as the [Store] bar on the Keypad. Press the Footswitch to store an image.

SECTION 3
Basic Operations

Table of Contents

Description	Page
Start Up and Shut Down	3-2
Start Up	3-2
Shut Down	3-2
Information Saved	3-3
Film Types	3-4
Film Handling	3-5
Overview	3-5
Loading Unexposed Film	3-9
Film Restraints	3-9
Using a Roomlight Magazine	3-9
Into the Supply Magazine	3-10
Changing Film Size	3-12
Unloading Exposed Film	3-14
Transport	3-16
Storing and Printing Images	3-18
Position Store Keys	3-18
Storing Images	3-18
Formats, Reverse Image Setting, and Number of Copies	3-19
Overview	3-19
Formats	3-19
Standard Formats	3-19
Special Format F1	3-20
Special Format F2	3-22
Reverse Image Setting	3-24
Number of Copies	3-24
Printing Pages	3-24
Autoprinting	3-24
Deleting Images and Pages	3-25
Deleting Images	3-25
Deleting Pages	3-25

Start Up and Shut Down

Start Up

NOTE

If the Printer is expected to be idle for more than 8 hours it should be shut down.

[1] If a Processor is connected to the Laser Printer, check that all Doors and Panels which might have been opened for overnight venting have been closed.

[2] Turn on the Processor.

[3] Turn on the Laser Printer and allow it to warm up.

NOTE

- It is possible, but not recommended, to print before the Printer is fully warmed up.
- A Processor attached to the Laser Printer may require additional time to warm up.
- If the "Print" command is issued before the chemistry in the Processor has reached the correct temperature, a message is displayed that the Processor is not ready. The pages remain in the Printer queue until the Processor is ready.

Shut Down

[1] Wait for all desired films to be printed.

IMPORTANT

When the Printer is turned off, the Receive Magazine Door locks. To avoid an incorrect Magazine count, remove and empty the Receive Magazine before turning off the Printer.

[2] Turn off the Laser Printer. The Receive Magazine Door is locked.

[3] If a Processor is attached to the Laser Printer, perform routine shut down and venting procedures for the Processor.

Information Saved

When the 1120 Laser Printer is turned off (or a power failure occurs), the following information is saved:

- number of copies,
- format selected,
- reverse or normal image polarity,
- Window values (width, level, curve shape),
- interpolation type,
- contrast options,
- autoprint option setting,
- rotation option,
- calibration data,
- the count for the Receive Magazine,
- system installation/configuration parameters.

Film Types

For the film type that is used with the KODAK EKTASCAN 1120 Laser Printer, see the following note.

NOTE

The KODAK EKTASCAN 1120 Laser Printer will operate correctly and produce higher quality images when KODAK EKTASCAN IR-7 (EIR-7) film is used. The EIR-7 film is finished in a roomlight format. This format is compatible with the KODAK EKTASCAN 1120 Roomlight Supply Magazine. Full roomlight operation is possible with the Roomlight Supply Magazine and the EIR-7 film.

The catalog numbers for the film are:

Film Type	Desc.	Size	Catalog No.
EIR-7	Blue	8 x 10 in.	170 0855
EIR-7	Blue	35 x 43 cm	837 9539
EIR-6	Clear	8 x 10 in.	816 4196
EIR-6	Clear	35 x 43 cm	847 5881

NOTE

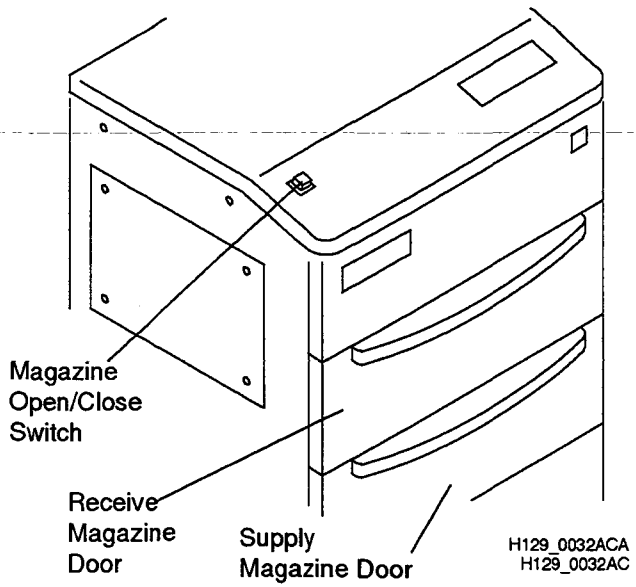
When a film other than EIR-7 is used, there can be operation and image quality problems.

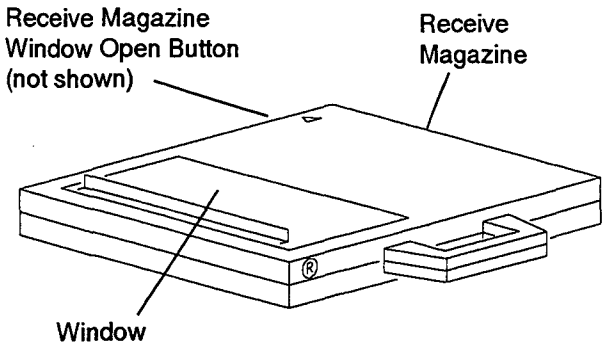
Film Handling

Overview

CAUTION

For proper IR film safelight recommendations, consult your KODAK representative.





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IMPORTANT

Before handling film or Magazines, read the following:

(1) The Supply and Receive Magazines each contain a **Window** that allows film to transfer out of the Supply Magazine and into the Receive Magazine. When the Printer is printing–

- the Windows in the Supply and Receive Magazines are open,
- the Magazine Doors are locked, and
- the Magazine Open/Close Switch is illuminated.

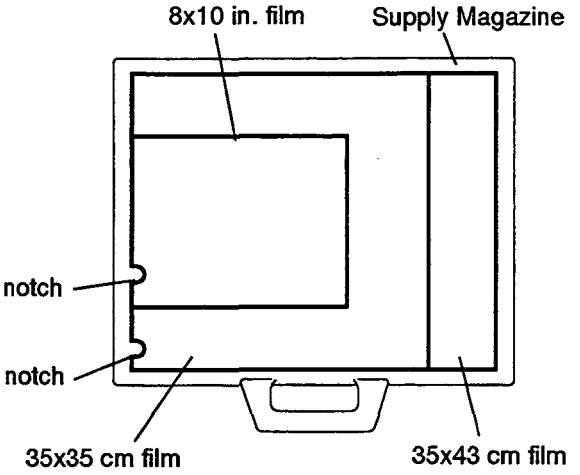
(2) The Printer counts the number of sheets of film sent to the Receive Magazine. When the Receive Magazine is removed from the Printer, the count resets to 0. To prevent an incorrect count:
- Do **not** insert a Receive Magazine that contains film,
- Do **not** remove the Receive Magazine if the Printer is off.

(3) For optimum image quality, the Printer should be re-calibrated after loading a box of film with a new emulsion number.

(4) When using other film manufacturer darkload film, always remember to remove and discard the cardboard stiffeners that are packed with the film.

(5) When loading film, use the notch as a guide for the correct position of the film. When the notch is aligned, (illustration page 3-8) the emulsion side is:
- down when loaded into the Supply Magazine,
- down when entering the Receive Magazine, and
- up when entering the Processor.

(6) A different Supply Magazine is required for each film size. Availability of film varies with region. The available film sizes are:
- 35 x 43 cm (default)
- 35 x 35 cm
- 11 x 14 in.
- 8 x 10 in.



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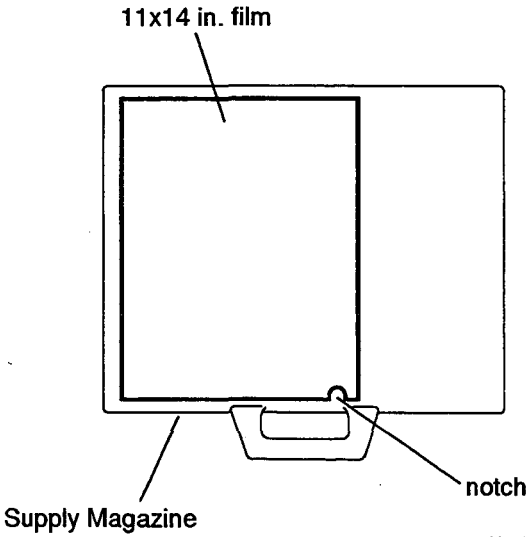

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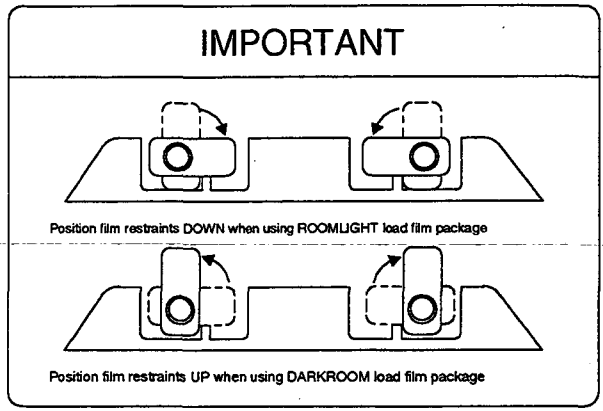
Loading Unexposed Film

Film Restraints

Before loading the film, check that the position of the Film Restraint is correct. The position of the Film Restraint will depend on whether the film is Roomlight Load or Darkroom Load film. See the following figure.


IMPORTANT
Position film restraints DOWN when using ROOMLIGHT load film package
Position film restraints UP when using DARKROOM load film package

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Using a Roomlight Magazine

To eliminate the need to load film in a darkroom, KODAK offers a special Roomlight Magazine. When loading a Roomlight Magazine follow the instructions on the Magazine.

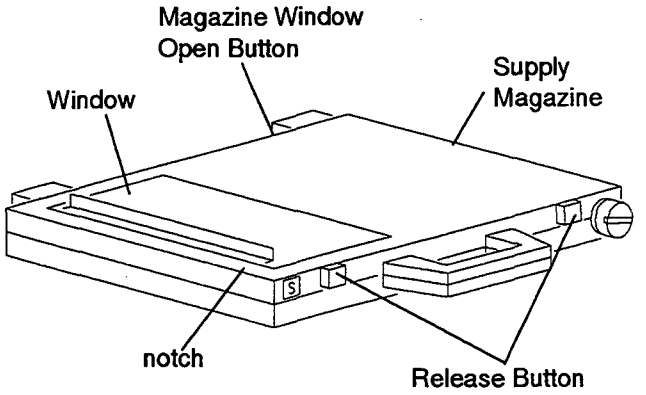
NOTE

There are Roomlight Films and Magazines, and Darkroom Films. It is possible to load either type of film in the Magazine; however, you must always be aware of lighting restrictions and packaging differences.

Into the Supply Magazine

[1] Place the Magazine and the film package on a clean table.

[2] Check that the film size to be loaded corresponds with the Magazine size.



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[3] When the Supply Magazine is NOT empty:

Check that the emulsion number of the new film is the same as the film remaining in the Supply Magazine. Do not mix emulsion numbers. If the emulsion numbers—

(a) **do not** match:

- turn off the lights
- unload the remaining film from the Magazine
- continue with step [4].

(b) **do** match:

- turn off the lights.
- press the Magazine Window Open or Release Buttons on the Magazine.
- slide the Window open or open the Magazine.
- when using darkroom load film, remove and discard the cardboard stiffeners that are packed with the film.

NOTE

Place a maximum of 110 sheets of film in the Supply Magazine.

- load the new film, under the old film, using the notch as a guide for the correct position.
- close the Magazine.
- continue with step [5].

[4] When the Supply Magazine is empty:

(a) Press the Magazine Window Open or Release Buttons.

(b) Slide the Window open or open the Magazine.

(c) Open and unwrap the film package, being careful to handle the film only by the edges.

(d) Remove and discard the cardboard stiffeners that are packed with the film.

(e) Load the film, using the notch as a guide for the correct position.

(f) Close the Magazine Window and turn the lights on.

[5] Press the Magazine Open/Close Switch. The blinking light indicates that the Magazine Windows are closing.

[6] When the light goes out, open the Supply Magazine Door and insert the Supply Magazine. If you are changing film size, continue with the procedure, "Changing Film Size."

NOTE

When changing film emulsions you should re-calibrate the Printer. See "Calibration" on page 5-2.

Changing Film Size

NOTE

When changing film size, the Magazine to be used **MUST** have been inserted into the Supply Magazine at least once since Printer installation.

[1] Press [Select Film] on the Keypad. The following is displayed:

```
FILM TYPE: (FILM SIZE)
PRESS F1 NEXT FILM, F2 SAVE, F3 QUIT
```

[2] Press [F1] to scroll through the possible film sizes.

NOTE

If a size is **not** available, the Keypad displays the following message.

```
FILM TYPE (FILM SIZE) (NOT PRESENT)
PRESS F1 NEXT FILM, F2 SAVE, F3 QUIT
```

[3] To save the desired film size, press [F2].

```
FILM TYPE: 35 x 43 cm
PRESS F1 NEXT FILM, F2 SAVE, F3 QUIT
```

NOTE

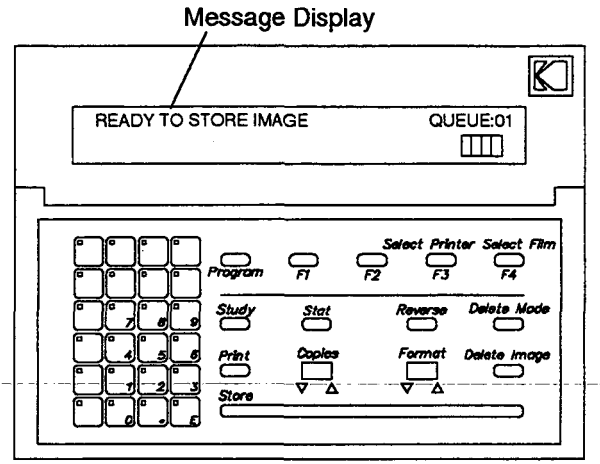
If the format must be changed to support the selected film size, the following message is displayed:

```
READY TO STORE IMAGE QUEUE: 0
FORMAT CHANGED TO 1   XXX
```

[4] Store and print images.

NOTE

The Supply Magazine does not have to be inserted to store an image.



H129_2501ACA
H129_2505AC

Unloading Exposed Film

[1] Wait for the Printer to complete printing or transporting film.

[2] Press the Magazine Open/Close Switch. The blinking light indicates that the Magazine Windows are closing.

[3] When the light goes out, open the Receive Magazine Door and remove the Receive Magazine.

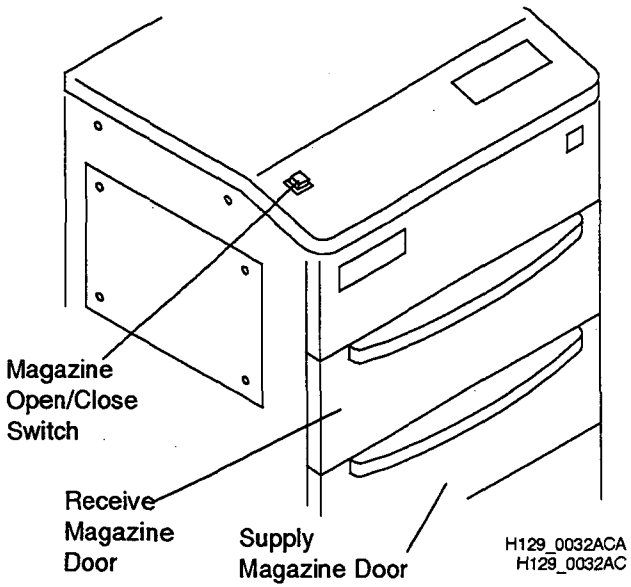
[4] Turn off the darkroom lights.

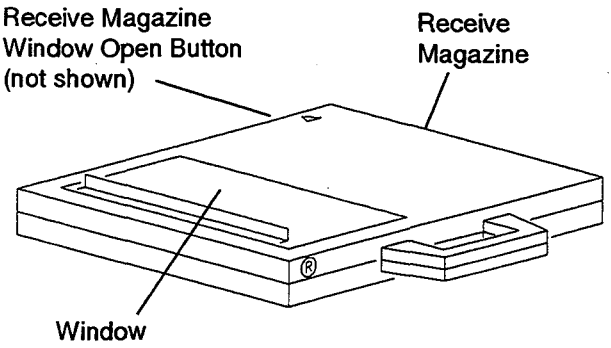
[5] Press the Receive Magazine Window Open Button and slide the Window open.

[6] Remove the film from the Magazine.

[7] Close the Window and carefully insert the Magazine into the Receive Magazine slot.

[8] Close the Receive Magazine Door.





H129_5901ACA
H129_5901AA

Transport

The Transport feature allows you to load a specific number of films in a Supply Magazine and transport them to a docked processor without exposing them in the laser printer. You can use this procedure to check the processor and its chemicals for quality control.

NOTE

The films must be KODAK EKTASCAN IR Film, and the correct size for the Supply Magazine that is used.

The following steps outline the use of the Transport feature.

[1] Check that:

- "PRINTER READY" is displayed on the Control Panel
- the Supply Magazine is removed
- the Magazine Door is closed
- the processor has been turned on and is ready.

[2] Press [On Line] to take the Printer off-line.

[3] Press [Next] until "Transport Mode" appears on the display:

```
TRANSPORT MODE
```

[4] Press [Select] to enter Transport Mode. The following screen appears:

```
ENTER FILMS: 01
```

[5] Press [▼] or [▲] to change the number of sheets of film to be transported.

[6] When the number displayed is correct, press [Select] and insert the Supply Magazine into the printer. Close the Magazine Door. This will activate the printer transporting the film. The following message appears on the display:

```
FILMS LEFT:  xx
```

[7] When the Supply Magazine is empty or the "FILMS LEFT: xx" reaches zero, the printer returns to the "PRINTER READY" message.

NOTE

While TRANSPORT is active, the user can not continue to store images and request prints.

Storing and Printing Images

Position Store Keys

This section describes how to store and print images using a Keypad.

NOTE

If autofilming is used or the store and print functions are controlled by the host control of the imaging unit, check the appropriate imaging device manual for the correct procedures.

Most formats activate the Position Store keys on the Keypad. See the "Keypad" section on page 2-6.

Use the "Quick Reference Guide" fold-out, located at the back of this manual, to locate items discussed in this section.

Storing Images

[1] Before storing images, check that the desired "Format" (page 3-19) and "Program" options (page 4-1) have been selected.

[2] To store an image, press a Position Store key, the [Store] bar, or the Footswitch.

NOTE

- The default sequence for storing images is from left to right, top to bottom.
- If the Position Store keys are not active for the selected format, use the Footswitch or the [Store] bar.
- A Supply or Receive Magazine does not have to be inserted to store an image.

Formats, Reverse Image Setting, and Number of Copies

Overview

Following are procedures to change format options, reverse image settings, and number of copies. For an overview of the Keypad, which is used to make these changes, refer to the "Keypad" section of the manual, page 2-6.

Formats

Standard Formats

The KODAK EKTASCAN 1120 Laser Printer retains the most recently used format for the next page.

The standard formats available are: 1, 2, 4, 6, 8, 9, 12, 15, 16, 20, 24, 30, 35, and KODAK Special Formats F1, and F2.

The formats available depend upon the amount of image memory installed in the Laser Printer, the input image size, and the film size.

[1] To change formats, locate the Format display on the Keypad.

[2] Press the [▼] or [▲] keys below the Format display until the desired format number is displayed. The Position Store keys at the left of the Keypad illuminates to show the store positions of the format selected.

NOTE

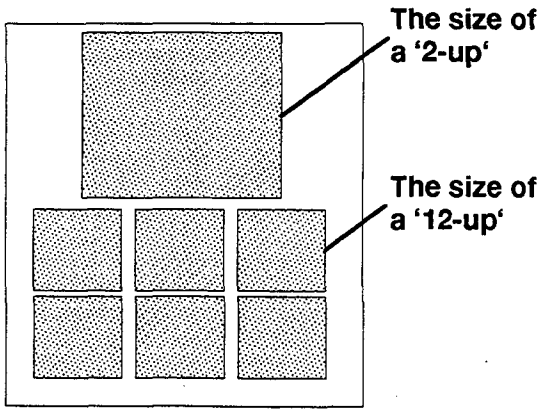
- Formats with more than 4 columns or 6 rows are not displayed.
- Formats may only be changed when no images have been stored on a page.

Special Format F1

Special Format F1 allows the printing of one large image and six smaller images.

Locate group "A" in the figure at the right. These four keys represent one image store position. Any of the keys in this group may be selected to store (or delete) the image for this position. Solid red LEDs illuminate in all four positions when the position is filled.

Locate group "B" in the figure at the right. These six keys represent six separate image store positions. Each key is used to store or delete an image in its assigned position. A solid red LED illuminates the position chosen.



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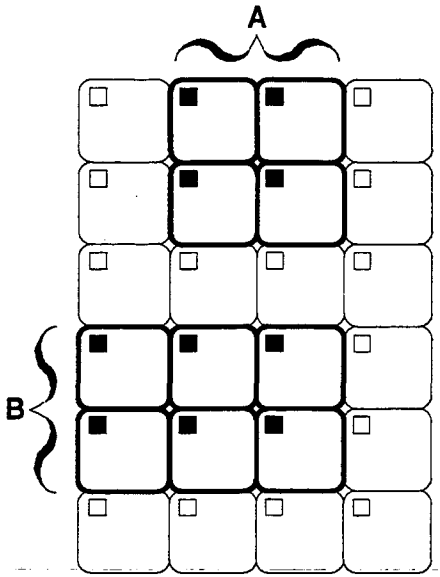
H027_2206AC

Special Format F1 Layout



H027_2208ACA
H027_2208AC

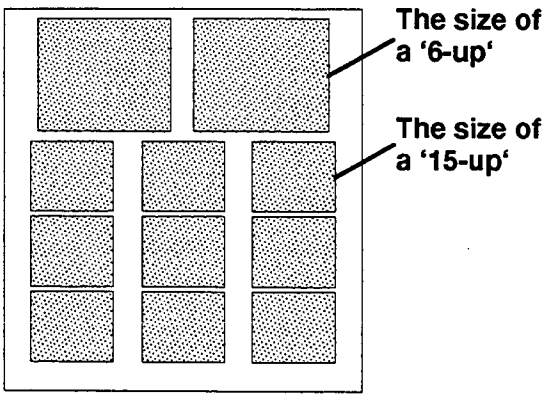
Special Format F1

Special Format F2

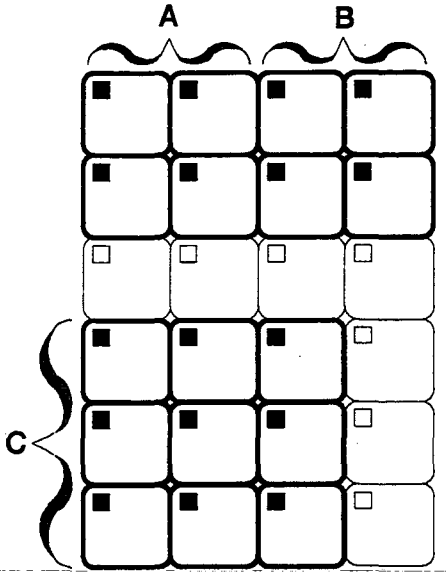
Special Format F2 allows the printing of two large images and nine smaller images.

Locate groups "A" and "B" in the figure at the right. These eight keys represent two image store positions. Any of the keys within a group may be selected to store (or delete) the image for that position. Solid red LEDs illuminate in all four positions of a group when the position is filled.

Locate group "C" in the figure at the right. These nine keys represent nine separate image store positions. Each key is used to store or delete an image in its assigned position. A solid red LED illuminates the position chosen.



Special Format F2 Layout



H027_2209ACA
H027_2209AC

Special Format F2

Reverse Image Setting

Use this option to select normal or reverse ("blackbone") tone scale for each image. The factory default tone scale is "normal."

NOTE

When the tone scale is reverse, the REVERSE indicator light is lit on the Keypad.

To change the tone scale from its current state, press the [REVERSE] key on the Keypad.

Number of Copies

You can select up to 99 copies. The number of copies **MUST** be changed prior to printing.

To change the number of copies, press the [▼] or [▲] key on the Keypad below the Copies display.

Printing Pages

To print a partial or complete page of images, press the [Print] key on the Keypad.

Autoprinting

If the AUTOPRINT function is enabled, the Keypad automatically sends the "PRINT" request to the Laser Printer if all image positions have been stored on the selected format. To enable the Autoprint function, see page 4-7 in the "Program Options" section.

NOTE

Autoprint should not be confused with autofilming. The "Keypad" section on page 2-6 explains autofilming.

Deleting Images and Pages

Deleting Images

If you are using a format for which the Position Store keys are active, press the [Delete Image] key once, and then press the specific Position Store key of the image to be erased.

Without Position Store Keys Being Active

If the format selected does not use the Position Store keys, delete the test image stored by pressing the [Delete Image] key twice. This method of deleting an image is also available when the position store keys are active.

Deleting Pages

To delete a partial or complete page press:

[Delete Mode]
[F1] .

IMPORTANT

Deleting a page must be done **before** it is placed in the print queue.

BLANK PAGE

4: "Program" Options

Table of Contents

Description	Page
Overview	4-3
Uses	4-3
Entering the Program Mode	4-3
Window Options	4-4
Overview	4-4
Window Width	4-4
Window Level	4-5
Curve Shape	4-6
Curve Series	4-7
Print Options	4-9
Overview	4-9
Interpolation Types	4-9
Border Option	4-10
Contrast Option	4-11
Contrast	4-11
Image D-Min	4-12
Image D-Max	4-13
Border D-Max	4-13
Configuration	4-15
Overview	4-15
Auto Print	4-15
Audio Option	4-16
Rotation Option	4-18

Control Terminal 4-20
Overview 4-20
The Main Menu 4-21
Reaching the Main Menu 4-22
Procdure 4-25
Operational Mode 4-26
Store Images 4-26
Print a Page 4-26
Change Format 4-27
Number of Copies 4-27
Delete an Image 4-27
Delete a Page 4-27
Rotation 4-27
Interpolation Type 4-27
Polarity 4-27
Image Setup 4-28
Common Text 4-29
Revising Text 4-29
Deleting Text 4-29
Troubleshooting and Error Codes 4-30
Troubleshooting 4-30
Error Codes 4-31
CP I/F Baseline Features Requirements 4-a
3 New Mixed Formats 4-a
Mixed Formats on a Networked Printer System 4-a
Normal Orientation Format Descriptions 4-b
Rotated Orientation Format Descriptions 4-e
LED Matrix Display 4-h

Overview

Uses

The [Program] key on the keypad allows the user to access set up functions which do not have dedicated keys on the keypad. Included in this key's functions are the following items:

- Window Options
- Print Options
- Configuration

The "Quick Reference Guide" fold-out may be useful in locating items which are sub-options under the above headings. Such items would include: Curve Shape, Interpolation, Border, Contrast, D-Min and D-Max, Auto Print, Audio, Auto Curve Shape, and Rotation.

Entering the Program Mode

To enter the Program Mode, press the [Program] key.

The Program Menu will be displayed and the numeric keypad will be backlit and active at this time.

```
F1 WINDOW OPTIONS    F2 PRINT OPTIONS
F3 UNAVAILABLE       F4 CONFIGURATION
```

To exit the Program Mode, press the [Program] key. If a parameter has been changed and is valid, it will be saved.

Window Options

Overview

The Window Options menu (the F1 selection of the Program Menu) allows the user to change the window width, level, or curve shape.

```
F1 WINDOW WIDTH      F2 WINDOW LEVEL
F3 CURVE SHAPE       F4 CURVE SERIES
```

IMPORTANT

The window options are normally set at the time of installation. At that time, they are adjusted so that the laser printer film output matches the console monitor. Unless the films no longer match the monitor, **do not change them.**

Window Width

To change the window width, press:

Program
F1
F1.

The system will request that the window width value be entered.

```
WINDOW WIDTH ENTRY
WIDTH: 256
```

NOTE

- The valid window width value range is between 1 and 4096.
- The factory default is 256.

Specify the value on the numeric section of the keypad and, to remain in the Program mode, press [E] on the numeric keypad. To specify the value and exit from the Program mode, press [Program].

NOTE

Window width should not be changed after initial set-up by qualified service personnel.

Window Level

To change the window level, press:

[Program]
[F1]
[F2].

The system will request that the window level value be entered.

```
WINDOW LEVEL ENTRY
LEVEL: 128
```

NOTE

- The valid window level value range is between 0 and 4095.
- The factory default is 128.

Specify the value and, to remain in the Program mode, press [E] on the numeric keypad. To specify the value and exit from the Program mode, press [Program].

NOTE

Window level should not be changed after initial set-up by qualified service personnel.

Curve Shape

To change the curve shape, press:

[Program]
[F1]
[F3].

The system will request that the curve shape value be entered.

```
CURVE SHAPE ENTRY
SHAPE: 3
```

NOTE

- The valid curve shape value range is between 0 and 6.
- The factory default is 3.
- The user may wish to use the "Auto Curve Shape" option in the "Configuration" section below to select one image, print 6 curve shapes on one sheet of film, and then, determining which images represents the desired optimal image appearance, use this "Curve Shape" menu to enter that selection.

Specify the value and, to remain in the Program mode, press [E] on the numeric keypad. To specify the value and exit from the Program Mode, press [Program].

Curve Series

The "Curve Series" option allows the user to select one image, print 6 curve shapes on one sheet of film, and then determine which image represents the desired optimal image appearance. The number of the selected curve shape would then be entered into the system by using the [PROGRAM] option's "Curve Shape" submenu.

To use the "Curve Series" option:

Display a desired image on the monitor and do not change the image during this procedure.

Press:

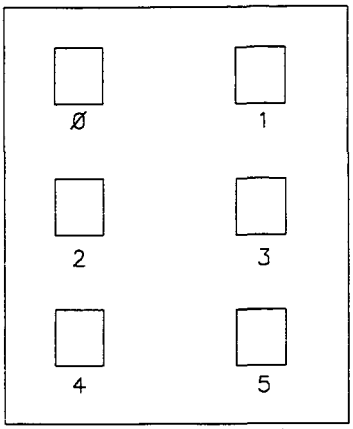
[Program]
[F1]
[F4].

The system will display the following menu.

```
PRINT F1 TO PRINT CURVE SHAPE SERIES
PRESS ANY OTHER KEY TO EXIT
```

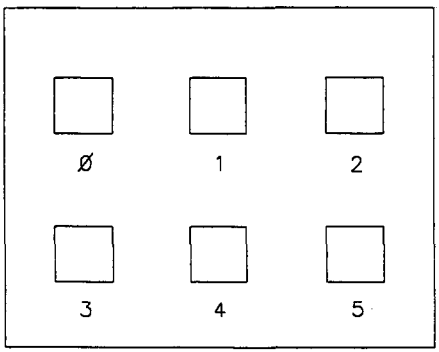
Press [F1] to print curve shape series. The user will see the message "Generating Curve Shape Series, Please Wait". After the curve shape series film has printed, use the illustrations below to select the curve shape number of the image with optimal image appearance.

Enter that curve shape number into the system by using the [Program] key's submenu. See page 4-6.



H027_0054AA

Curve Shapes 0 through 5 on 35 x 43 cm and 8 x 10 in. film



H027_0055AA

Curve Shapes 0 through 5 on 11 x 14 in. film

Print Options

Overview

For the user to enter the "Print Options" menu, no images can be stored on the current page. The "Print Options" menu allows the user to access and change the following items.

- Interpolation Type
- Border
- Contrast Option--Contrast, D-Min (minimum density) and D-Max (maximum density).

To enter the "Print Options" menu, press:

Program
F2.

NOTE

The system will display the following menu.

```
F1 INTERPOLATION    F2 BORDER OPTION
F3 UNAVAILABLE      F4 CONTRAST OPTION
```

Interpolation Types

Replication and Cubic Spline are used to enlarge images to their maximum size, based on the selected format. No Magnification prints images without enlarging them. The factory default is Cubic Spline.

To change the interpolation type, press:

Program
F2
F1.

NOTE

The system will display the following menu.

```
INTERPOLATION TYPE:  ?
PRESS F1 FOR NEXT OPTION, OR ENTER
```

The current interpolation type will be displayed and the system will prompt the user to press [F1] to cause the next interpolation type to be displayed.

When the desired interpolation type is displayed, press [E] on the numeric keypad to remain in the Program mode or press [Program] to specify the type and exit from the Program Mode.

Border Option

The Border Option allows the user to select black or clear borders for the non-image area. (See also the "Trim" option below.) The factory default for the Border Option is black.

To change the border type, press:

[Program]
[F2]
[F2].

NOTE

The system will display the following menu.

```
BORDER DENSITY:  BLACK
PRESS F1 FOR CLEAR BORDER OR, ENTER
```

The current Border state will be displayed: BLACK or CLEAR.

To change the Border, press [F1] followed by the [E] on the numeric keypad or the [Program] key.

Contrast Option

This menu item allows the user to change the Contrast, Image D-Min (minimum density), Image D-Max (maximum density), or Border D-Max of printed pages. To enter the "Contrast Options" menu, press:

[Program]
[F2]
[F4].

NOTE

The system will display the following menu.

```
F1 CONTRAST          F2 IMAGE D-MIN
F3 IMAGE D-MAX       F4 BORDER D-MAX
```

Contrast

To change the contrast setting, press:

[Program]
[F2]
[F4]
[F1].

The system will prompt the user to enter the contrast value.

```
CONTRAST ENTRY
CONTRAST: 0
```

NOTE

- The valid range of contrast values is -5 to +5. The + means more contrast and the - means less.
- The factory default is 0.
- If a negative value is to be specified, press the minus sign first.

Specify the value and, to remain in the Program mode, use [E] on the numeric keypad. To specify the value and exit from the Program Mode, press [Program].

IMPORTANT

- Within the calibrated range, the D-Min and D-Max settings allow the user to customize the minimum and maximum density of images for a specific input. For example, an ultrasound input may require a lighter D-Max image than other inputs using the same calibration setting.
- The range of densities from D-Min to D-Max will be the lowest to highest values measured on the Calibration Test Pattern Image.

Image D-Min

To change the minimum density (D-Min) setting, press:

[Program]
[F2]
[F4]
[F2].

NOTE

The system will display the following menu.

```
D-MIN ENTRY
D-MIN:  0.00
```

The system will prompt the user to enter the minimum density value.

Specify the minimum density value and, to remain in the Program mode, press [E] on the numeric keypad. To specify the value and exit from the Program Mode, press [Program].

Image D-Max

To change the image maximum density (D-Max) setting, press:

[Program]
[F2]
[F4]
[F3].

NOTE

The system will display the following menu.

```
D-MAX ENTRY
D-MAX:  3.99
```

The system will prompt the user to enter the maximum density value.

Specify the maximum density value and, to remain in the Program mode, press [E] on the numeric keypad. To specify the value and exit from the Program Mode, press [Program].

Border D-Max

To change the Border D-Max density, press:

[Program]
[F2]
[F4]
[F4]

NOTE

The system will display the following menu.

```
BORDER D-MAX ENTRY
BORDER D-MAX:  3.99
```

The system will prompt the user to select a value between 0 - 3.99. The border density cannot go below the Image D-Max setting. Border D-Max must be greater than or equal to Image D-Max.

Specify the density value and, to remain in the Program Mode, press [E] on the numeric keypad. To specify the value and exit from the Program Mode, press [Program].

Configuration

Overview

For the user to enter the "Configuration Options" menu, no images can be stored on the current page. The "Configuration Options" menu allows the user to access and change the following items.

- Auto Print
- Audio Option
- Rotation Option.

To enter the "Configuration Options" menu, press:

[Program]
[F4].

NOTE

The system will display the following menu.

F1 AUTO PRINT	F2 AUDIO OPTION
F3 UNAVAILABLE	F4 ROTATION OPTION

Auto Print

The auto print option allows the user to specify that a page should be sent to the print queue automatically when the page format has been filled with images.

When auto print is not enabled, the user presses [Print] on the keypad to send each page to the print queue.

The factory default for auto print is ON.

To change the auto print status, press:

[Program]
[F4]
[F1].

NOTE

The system will display the following menu.

```
AUTO PRINT OPTION:  ON
PRESS F1 FOR AUTOPRINT OFF, THEN ENTER
```

The current setting will be displayed.

To change the current setting, press [F1] and [E] on the numeric keypad.

The current setting will change to the opposite.

NOTE

The [Print] key can be used at any time, even if auto print is ON. This means that the user can print partial pages, even if the page is not filled.

Audio Option

The Audio menu selection allows the user to specify their preference for audible feedback from the keypad.

The options include:

- no feedback except error tones,
- the "Store" tone sounds when the user begins a Store command,
- the "Store" tone sounds when a Store command is completed,
- the "Store" tone sounds at **both** the beginning and the end of the Store command.

The factory default is for the "Store" tone to sound at the beginning of a Store command.

To change the audio status, press:

[Program]
[F4]
[F2].

NOTE

The system will display the following menu.

```
AUDIO OPTION:  BEGINNING OF STORE
PRESS F1 FOR NEXT OPTION, OR ENTER
```

The current setting will be displayed.

To change the current setting, follow the system prompts and press [E] on the numeric keypad.

Rotation Option

This option allows the user to have all images of a format rotated 90° clockwise. A rotation type (ON or OFF) is saved for each format. The factory default for each format is OFF.

NOTE

- Image store times will increase when the rotation feature is utilized.
- The common text will not rotate. Therefore, the common text will appear in the same position on the film with image rotation ON or OFF. See the example on the opposite page. Common text is the text that can be printed across the bottom of all films for an imaging device. It can contain:
  - the date that the film was printed.
  - the time that the film was printed.
  - the film count with the study. For example, 01/06 indicates the first of 6 films.
  - any other text desired. For example, the hospital name and the imaging device.
- If the rotation option is invalid for a specific format because of the image size, the system will not allow that format to have rotation ON. The keypad will beep when you try to select rotation ON, indicating that you have pressed an invalid key.

[1] To change the rotation status, press the Format display up or down arrow keys until the desired format is displayed.

[2] To display the current rotation setting, press:

[Program]
[F4]
[F4].

NOTE

The system will display the following menu.

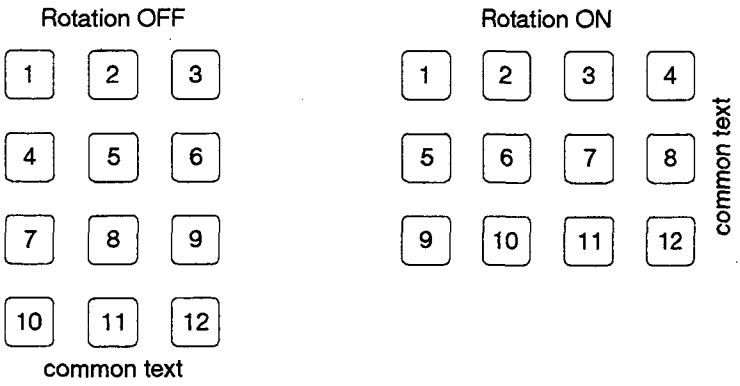
```
ROTATION FOR SELECTED FORMAT:  OFF
PRESS F1 TO CHANGE ROTATION OPTION
```

[3] To change the current setting, press F1. The setting will toggle between OFF and ON.

[4] To store that new setting with the format, press E on the numeric keypad. To store the new setting and exit from the Program Mode, press Program.

The following is an example of a 12-up format. The diagram at the left indicates the arrangement of the images on the film with rotation OFF. The diagram at the right indicates the arrangement with rotation ON. Note that the position of the common text on the film is the same in both cases.

The illumination pattern of the LEDs on the keypad is the same as the arrangement of the images on the film. However, if the format and rotation options you select cannot be represented by the 4 x 6 LED matrix on the keypad (for example, a 24-up format with rotation ON), the LEDs and their associated store keys are disabled. This means that the LEDs do not illuminate when you press the keys. In this case, the images can be stored only in their default positions by pressing the Store bar. The keypad displays a status message as each image is stored.



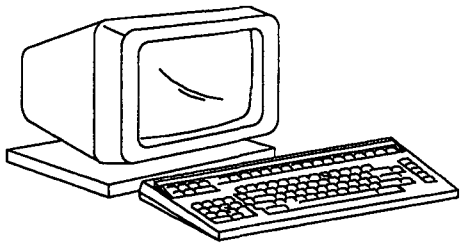
Control Terminal

Overview

The *control terminal* can be used to supplement *autofilming* or keypad features for any device that sends commands to the laser printer. For example, *Dmin* and *Dmax* settings, *contrast adjustment*, and common text.

NOTE

Occasionally, an *autofilming* device will override a desired function that has been set up with the *control terminal*. If this happens, contact your Kodak service representative regarding the operation of the *imaging device* with the laser printer.



Control Terminal

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H126_0021AA

The Main Menu

The Control Terminal Main Menu allows access to four groups of *options*:

- **Operational Mode**
  - Store Images
  - Print a Page
  - Print Priority
  - Format
  - Number of Copies
  - Delete an Image
  - Delete a Page
  - Rotation
  - Interpolation Type
  - Polarity
  - Select Film Size
- **Image Setup**
  - Widow Width
  - Window Level
  - Curve Shape
  - Border
  - Contrast
  - Image Dmin
  - Image Dmax
  - Curve Series
  - Border Dmax
- **Common Text Setup**
- **Change Destination**

Never press the [Set Up] key at the top right of the *control terminal* keyboard. This key is used to reconfigure the terminal and doing so will invalidate the customized installation *default* settings for the *control terminal.*

If the [Set Up] key is accidentally pressed and a *menu* is displayed, press the [Set Up] key again to exit from that *menu.*

Reaching the Main Menu

Follow these steps to reach the Main Menu:

[1] Verify that the *control terminal* is turned on. The ON/OFF switch is on the right side of the terminal, with the Brightness and *Contrast adjustments.*

[2] If the Display Screen is blank, press any key to display the Main Menu. If the Main Menu does not appear, see the Troubleshooting section for the Control Terminal.

IMPORTANT

Menu item 1 below should be selected only if the terminal type is WYSE. If the terminal is not a WYSE terminal and item 1 is accidentally selected, the Mode Selection Menu will be displayed. At that menu, use the [Esc] key to return to the Terminal Type Menu and select item 2.

If the user indicates a WYSE terminal specification when it is not a WYSE terminal, and makes a selection from the Mode Selection Menu, with the non-WYSE terminal, the *control terminal* display may show a garbled message.

If the user presses [Esc] and the system returns to the Mode Selection Menu, nothing further needs to be done. If the terminal does not respond to the [Esc] key, the terminal parameters may have been changed by the error. Reset the parameters to their original values, and press [Esc]. At the Terminal Selection Menu, select the correct specification.

[3] Specify that the terminal is a WYSE terminal or a different type.

```
TERMINAL TYPE MENU

1.  Kodak Control Terminal (WYSE)
2.  Kodak Service Engineering Terminal

Enter Menu Item:1
```

[4] Specify that the terminal is to be used for laser printer operations rather than service operations.

```
MODE SELECTION MENU

1.  Laser Printer Operations
2.  Service Operations

Enter Menu Item:1
```

[5] Select which *imaging device* is to be affected by the *control terminal* operation.

```
        INPUT SELECTION MENU

  1.  First imaging device
  2.  Second imaging device
      .
      .
      .
Enter Menu Item:1
```

NOTE

The *imaging device* names shown on the Input Selection Menu are user-specified.

Procedure

To reach the Main Menu from the initial Terminal Type Menu, enter:

(1) [1] and press "ENTER"
(2) [1] and press "ENTER"
(3) [n] (the *menu* number of the *imaging device*) and press "ENTER"

The Main Menu and the name of the *imaging device* being affected will be displayed. The name of the *imaging device* being affected will also be printed on the *screen* when each of the Main Menu suboptions are displayed.

```
                MAIN MENU

    1.  Operational Mode
    2.  Image Setup
    3.  Custom Format
    4.  Common Text Setup
    5.  Change Control Link
    6.  Change Destination
    7.  Return to Input Menu

    Enter Selection: 1
```

When an *option* from the Main Menu is selected, press ENTER; the next *screen* shows both the submenu *options* and, at the bottom of the *screen*, a list of the Function keys [F1] through [F10] and what they do. Where more *options* exist than can be shown on one list, the [F9] key will be designated as the [Change] key. Pressing [F9] will cause the remaining available *options* to be displayed.

Operational Mode

The following functions are available through the Operational Mode Menu. The values for **most** of these functions will be displayed on the *screen* in an area that is labeled "Current Settings."

- Store Images
- Print a Page
- Print Priority
- Change Format
- Number of Copies
- Delete an Image
- Delete a Page
- Rotation
- Interpolation Type
- Polarity

Store Images

The *default image* store positions are from left to right and from top to bottom.

The "STORE" command *default* will be in the next available position, but *images* can be stored in any available position.

The *page* diagram will be dynamically updated to reflect the positions that have a stored *image*.

Print a Page

No special information.

Change Format

All valid formats will be displayed when this function is selected.

To enter an [F1] through [F3] format, type the letter "F" and the number (for example, "F" and "1"). The [F1], [F2], and [F3] function keys above the normal keyboard area are not available whenever a *prompt* is active, so the two items must be typed.

When a format has been specified, the *page* diagram will be updated to reflect the new format.

Number of Copies

No special information.

Delete an Image

Images will be deleted first from the last stored position and then the reverse of the *default* store sequence. That is, from bottom to top and from right to left.

Delete a Page

No special information.

Rotation

No special information.

Interpolation Type

The "Current Settings" area of the *menu screen* will be replaced with the available *interpolation options*. Select one of the *options* to set the *interpolation* type.

Polarity

No special information.

Image Setup

The following functions are available through the Image Setup Menu:

- Window Width
- Window Level
- Curve Shape
- Border Dmax
- Contrast
- Image Dmin
- Image Dmax
- Curve Series

If an *option* is selected that is not available on this laser printer, the *control terminal* will sound an "Invalid Key" response.

Common Text

Main Menu item number 4, "Common Text," allows the specification of text that will be printed across the bottom of all films for that *imaging device*. It consists of 1 line of up to 80 characters, centered on the bottom of the film. When this item is selected, the *screen* displays the current text specification of the *imaging device* and the [F1] and [F2] keys are used to update or delete the text.

Revising Text

If [F1] is selected, you can retype each line of text and then press the [Return] key. In the process, change whatever items are necessary. Once the [Return] key is pressed for a line, the system moves to the next line.

To print the date and time, type the following macros in the text:

Macro	Printed As	Example
%PRTDAT%	dd-mmm-yy	29-OCT-92
%TIM%	hh:mm	14:06

Finally, the system asks you to specify "B" for black text or "C" for clear text and (S)ave, (R)evise or [Esc] to quit.

Deleting Text

If [F2] is selected, the system asks for a verification before the text is deleted.

Troubleshooting and Error Codes

Troubleshooting

Blank Display Screen

If a terminal is not used for several minutes, the *screen* will become blank to protect the *screen* from "burning in" the characters. When the *screen* is blank, use the following sequence to refresh the *screen*:

(1) Press any key.

(2) If the *screen* did not refresh, turn the *control terminal* off and then on.

(3) Check that the laser printer is functioning properly.

(4) Check that the *imaging device* is communicating successfully with the laser printer. This will indicate whether or not the *interface* is responding.

(5) If none of the above steps refresh the *screen*, contact your authorized service person.

Garbled Screen

If the user indicates a WYSE terminal specification when it is not a WYSE terminal, and makes a selection from the "Mode Selection Menu" with the non-WYSE terminal, the *control terminal* display may show a garbled message.

If the user presses [Esc] and the system returns to the "Mode Selection Menu," nothing further needs to be done.

If the terminal does not respond to the [Esc] key, the terminal parameters may have been changed by the error. Reset the parameters to their original values, and press [Esc]. At the "Terminal Selection Menu," select the correct specification.

Locked Screen

If the user inadvertently presses [Ctrl], and the letter "S", the display terminal will appear to "lock" and not respond. This is a command that stops the *screen* from scrolling to allow a user to see a single *screen* of information. If this happens, press [Ctrl], and the letter "Q" to resume scrolling. The *screen* will "unlock" and respond normally.

Vertical Misalignment of Display Screen

The WYSE Set Up Menu may have been accessed and the terminal characteristics were changed. To re-establish the WYSE terminal as a *control terminal*:

(1) Press the [Set Up] key.
(2) Press [F2].
(3) Use the Space Bar until "WYSE 50+" is displayed in the upper-left corner.
(4) Press the [Set Up] key.
(5) Press the Space Bar until "Yes" is displayed.
(6) Press the [Set Up] key.
(7) The next *menu* item selected will re-align the Display Screen.

Error Codes

If a fatal *interface* error occurs, all *control terminal* activities will stop and will be replaced by a request for a service personnel password. If this occurs, turn the laser printer on and off. If the *control terminal* continues to request the service personnel password, contact your authorized service person.

BLANK PAGE

4: CP I/F Baseline Features Requirements

3 New Mixed Formats

This software release adds support for 3 new, predefined, "Mixed formats". The new mixed formats are available through the keypad interface.

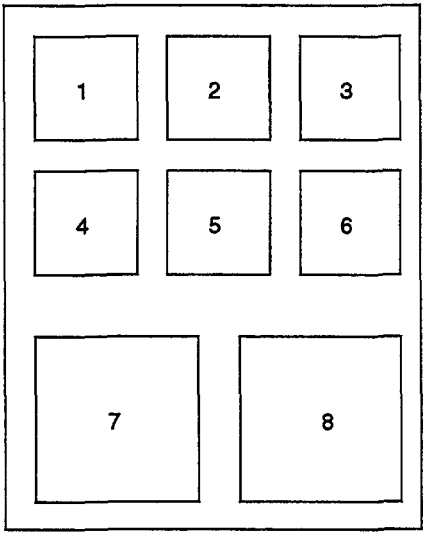
The keypad indicates that the new formats are available by showing that the F4, F5, and F6 formats are now valid when the operator scrolls to those formats.

These new formats are subject to the same constraints in film size as other formats. When the user selects a smaller film size or a larger image size, it is possible that F4, F5, and F6 will not fit on the new film size. If the format in question will not fit on the new film size, then the format ID will not appear in the format window on the keypad.

These formats are supported by the Stand-alone Keypad. These formats are also are supported by Auxiliary Keypad configurations which currently support format selection from the keypad.

These formats are available in both portrait layout and landscape layout.

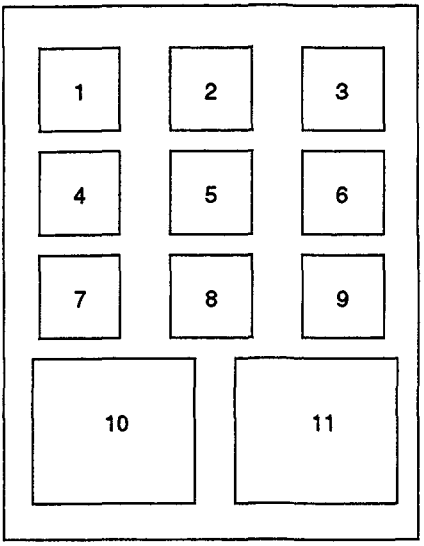
Normal Orientation Format Descriptions



F4(6+2) H027_9265AC

F4 (6+2) Rotated

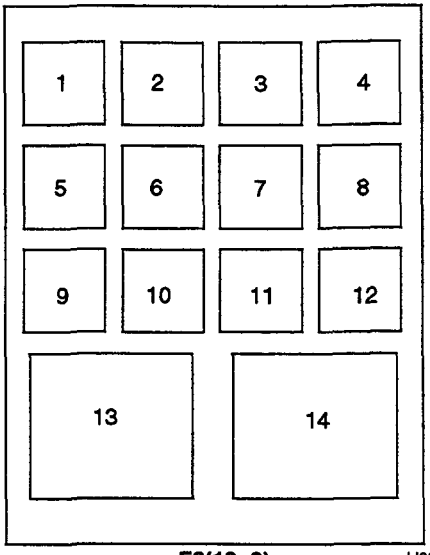
- This format consists of 8 image positions, 2 large images in the lower section of the page and 6 small images in the upper section of the page.



F5(9+2) H027_9267AC

F5 (9+2)

- This format consists of 11 image positions, 2 large images in the lower section of the page and 9 smaller images in the upper section of the page.

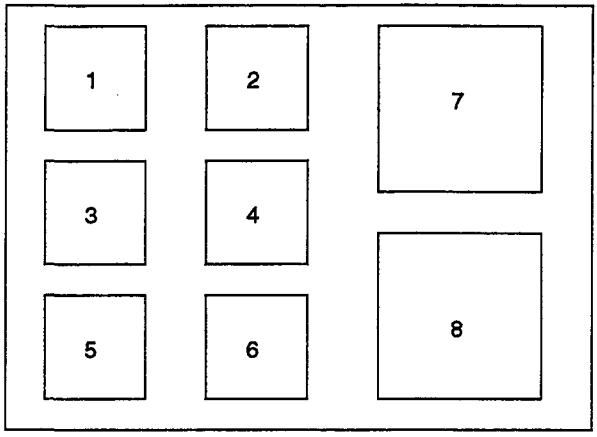


F6(12+2) H027_9268AC

F6 (12+2)

- This format consists of 14 image positions, 2 large images in the lower section of the page and 12 smaller images in the upper section of the page.

Rotated Orientation Format Descriptions

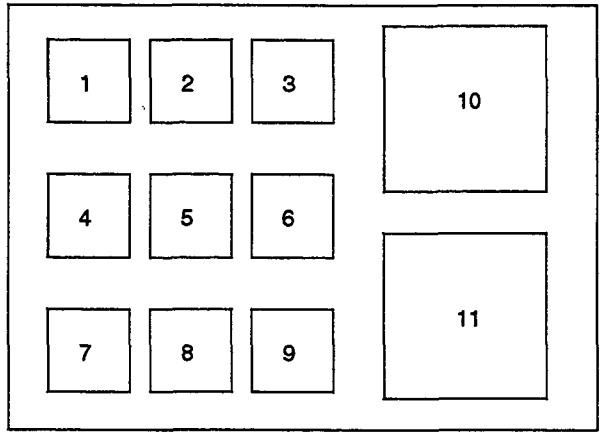


F4(6+2)Rotated

H027_9264AC

F4 (6+2) Rotated

- This format consists of 8 image positions, 2 large images in the lower sections of the page and 6 smaller images in the upper section of the page.

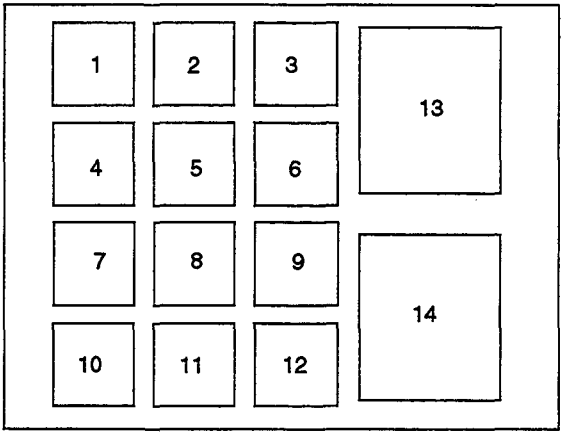


F5(9+2)Rotated

H027_9266AC

F5 (9+2) Rotated

- This format consists of 11 image position, 2 large images in the lower section of the page and 9 smaller images in the upper section of the page.



F6(12+2)Rotated

H027_9269AC

F6 (12+2) Rotated

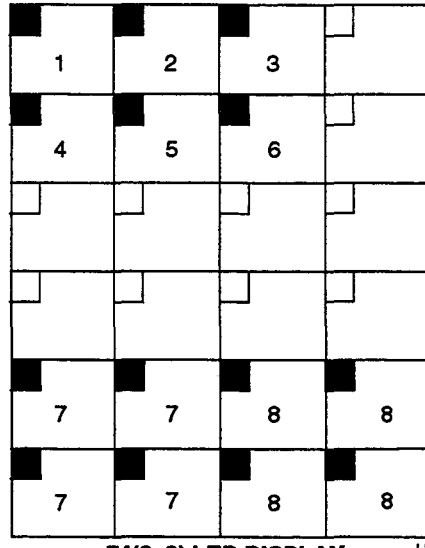
- This format consists of 14 image position, 2 large images in the lower section of the page and 12 smaller images in the upper section of the page.

LED Matrix Display

The Keypad has a 6 row by 4 column LED display matrix. Each LED will correspond to an image portion on the sheet of film. The LED will be green when the position is open and red when the position is filled. Since the images in the new mixed formats vary in size, 1 LED willl be lit for the smaller image position and 4 LEDs will be lit for the larger positions.

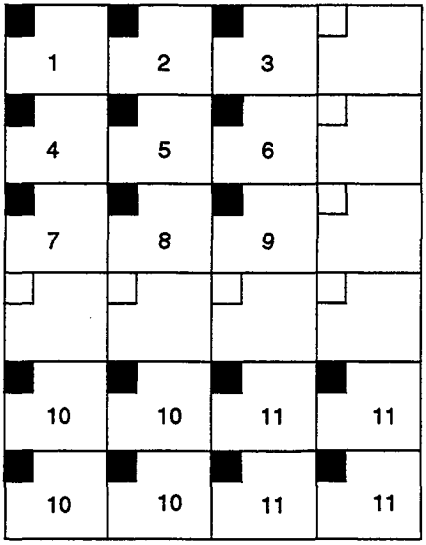
Important

There is no LED Matrix display when a new mixed format is rotated. Only the position count is displayed.



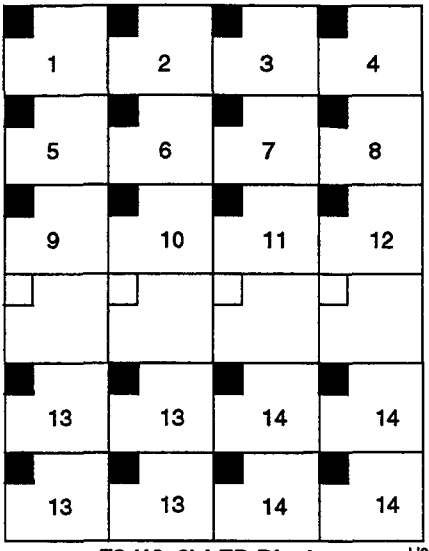
F4(6+2) LED DISPLAY H027_9270AC

F4 (6+2) LED Display



F5 (9+2) LED Display H027_9271AC

F5 (9+2) LED Display



F6 (12+2) LED Display H027_9272AC

F6 (12+2) LED Display

Print Date	Pub. No.	ECO No.	Affected Pages	File Name
01AUG97	7C1653	2632-286	Section 4	om3230_2.doc
	An Addendum to Section 4 of 5B9615, Dated 10/95. A Part of 5B9623 Binder.			
26AUG97	7C1653	2632-286	Section 4	om3230_2.doc
	Supersedes Addendum to Section 4 of 5B9615, Dated 01AUG97 A part of 5B9623 Binder.			

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om3226_2.doc.doc

Printed In USA

HEALTH IMAGING

EASTMAN KODAK COMPANY ● ROCHESTER, N.Y. 14650

SECTION 5
Calibration and Tone Scaling

Table of Contents

Description	Page
Calibration	5-2
Overview	5-2
Calibrating - Using A Stored Table	5-4
Introduction	5-4
Entering the Calibration Mode	5-5
Verifying the Density Setting and Step Values	5-6
Beginning the Calibration	5-7
Calibrating - Creating a New Calibration Table	5-8
Introduction	5-8
Entering the Calibration Mode	5-9
Printing the Calibration Image	5-10
Measuring Density Data	5-11
Using a Densitometer	5-11
Using the KODAK Process Control Densitometer	5-12
Entering Density Data Into the Printer	5-14
Beginning the Calibration	5-14
Calibration Errors	5-15
Tone Scaling	5-16

Calibration

Overview

Calibration is a method of ensuring consistent image appearance despite differences in film emulsions and variations in Processor chemistry. Calibration also provides consistent filmed images regardless of which Printer or Processor is used.

The KODAK EKTASCAN 1120 Laser Printer can store 11 calibration tables. When the Printer is taken off-line, the Control Panel displays the calibration number that was used last.

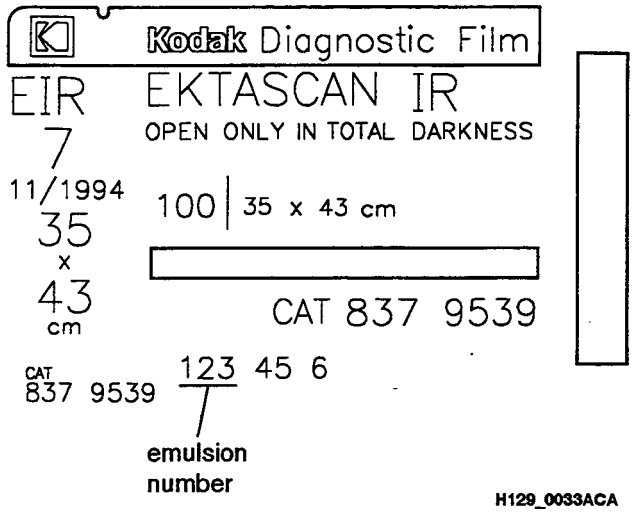
Storing and printing images can be done at any time during calibration. If calibration takes place while the Laser Printer is printing, the **new** calibration takes effect only when all copies of the current page have completed printing.

When to Calibrate

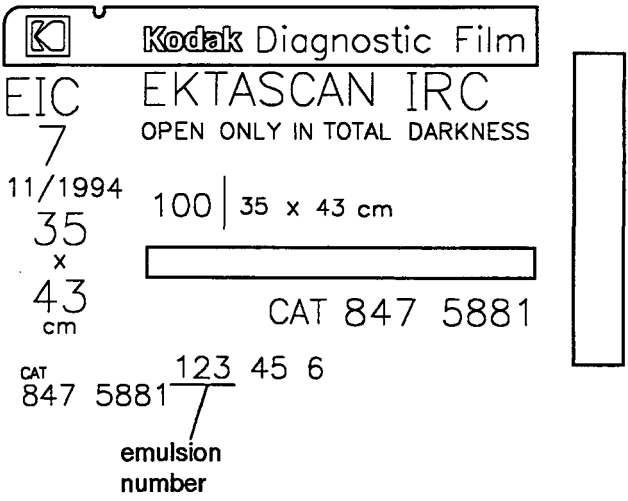
In general, the KODAK EKTASCAN 1120 Laser Printer produces very consistent output. For optimum image quality, however, the Laser Printer should be re-calibrated when changing:

- film emulsion,
- the processing environment–for example, the chemistry, Processor temperature, or changing Processors,
- the density setting.

To determine whether the emulsion number has changed, read the label on the side of the box of film. See the 2 label samples on the page opposite.



H129_0033ACA
H129_0033AA



H129_0034ACA
H129_0034AA

Calibrating - Using A Stored Table

Introduction

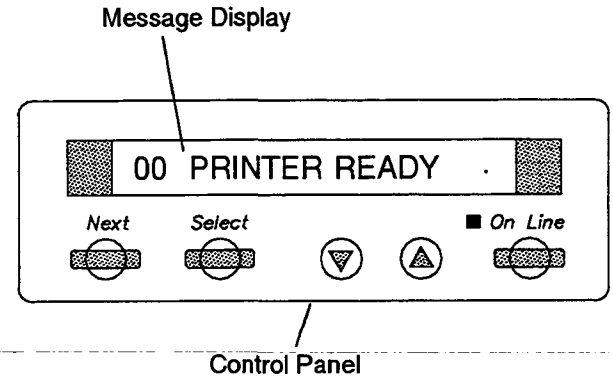
Entering new calibration data for a calibration number results in loss of existing data for that number.

There are three parts to using a stored calibration table:

(1) Entering the Calibration Mode
(2) Verifying the Density Setting and Step Values
(3) Beginning the Calibration

Entering the Calibration Mode

[1] Check that the Laser Printer and the Processor are warmed up, and the "PRINTER READY" message is displayed on Control Panel of the Printer.



H129_2500ACB
H129_2500AC

[2] Press [On Line] to take the Printer off-line.

```
1. CALIBRATION #X
```

[3] Press [▼] or [▲] to select the correct calibration number (1-11).

[4] If you need to verify the density setting and the step values, continue with step [6].

[5] If you do **not** need to verify:

(a) Press [SELECT].

(b) Press [NEXT], [NEXT], [NEXT].

(c) Continue with step [13].

Verifying the Density Setting and Step Values

[6] Press [SELECT].

```
1A  SET DENSITY
```

[7] Press [SELECT].

```
-3 -2 -1 0 +1 +2 +3
```

[8] Verify that the correct density number is underlined.

IMPORTANT

If the density number is not correct, you **MUST** re-calibrate the Printer, see page 5-8.

[9] Press [SELECT].

```
1B  PRINT CAL IMAGE
```

[10] To skip this option, press [NEXT].

```
1C  ENTER DATA
```

[11] Press [SELECT].

```
ENTER STEP 1;  X.XX
```

[12] Press [NEXT] to scroll through the 9 steps and verify the data.

Beginning the Calibration

[13] Press [SELECT] .

```
1D BEGIN CALIBRATION
```

[14] Press [SELECT] again to begin the calibration.

```
  CALIBRATING
```

[15] Wait about one minute for the Printer to successfully compute the calibration table.

```
00 PRINTER READY
```

Calibrating - Creating a New Calibration Table

Introduction

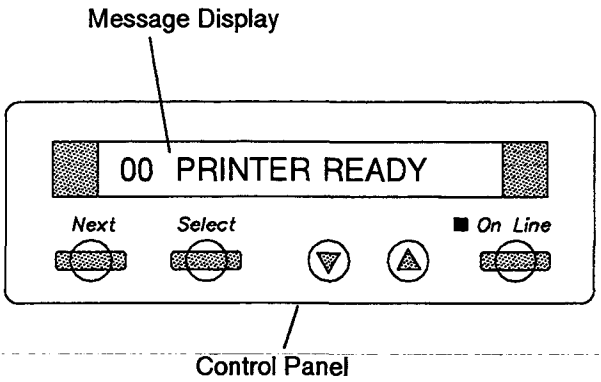
Entering new calibration data for a calibration number results in loss of existing data for that number.

There are five parts to creating a new calibration table:

(1) Entering the Calibration Mode
(2) Printing the Calibration Image
(3) Measuring Density Data:
    - Using a Densitometer
    - Using the KODAK Process Control Densitometer
(4) Entering Density Data Into the Printer
(5) Beginning the Calibration

Entering the Calibration Mode

[1] Check that the Laser Printer and the Processor are warmed up, and the "PRINTER READY" message is displayed on Control Panel of the Printer.



H129_2500ACB
H129_2500AC

[2] Press [On Line] to take the Printer off-line.

[3] Press [▼] or [▲] to select the calibration number (1-11), where the current calibration will be stored.

[4] Press [SELECT].

[5] Press [SELECT].

[6] Press [▼] or [▲] to underline the desired density for the film.

```
1. CALIBRATION #X
```

```
1A  SET DENSITY
```

```
-3 -2 -1 0 +1 +2 +3
```

Printing the Calibration Image

[7] Press SELECT .

```
1B  PRINT CAL IMAGE
```

[8] Press SELECT .

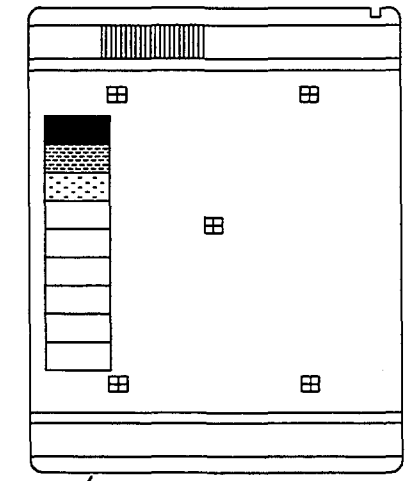
```
PRINTING CAL IMAGE
```

[9] Process the Calibration Image in the same Processor that is used to process film printed by the Laser Printer.

[10] Use a densitometer to verify that the maximum density of the Calibration Image is at the desired value.

NOTE

If the density of the darkest step is too light or too dark, perform steps [2] through [10] again, changing the density setting.



Calibration Image

H129_0101ACA
H129_0107AC

Measuring Density Data

[11] Use a densitometer to measure the 9-step density data.

NOTE

Advance to step [15] if using the KODAK Process Control Densitometer.

Using a Densitometer

[12] Prepare the densitometer for use.

[13] Measure the density at the center of each gray step on the Calibration Image.

CAUTION

- Always read the densities with the notch is in the lower left corner when using EIR-7 Daylight Load Film. Also check that the emulsion side of the film is toward you.
- Read all 9 steps from the gray scale on the calibration image.

[14] Record the data, and go to step [29] on page 5-14.

Using the KODAK Process Control Densitometer

[15] Prepare the densitometer for use.

[16] After passing a self-test, the densitometer displays:

```
CH:I MAIN MENU
p1 send view hst
```

[17] Press both [MENU] keys on the Densitometer simultaneously.

[18] Insert the Calibration Image at the **Stop** until the film rests against the drive rollers and the motor is activated.

[19] While the film is measured, carefully hold the film against the **Stop**, guiding the film to prevent skewing.

[20] Press the [MENU] key that is under the displayed word "go".

[21] When the display shows "go" again, press [MENU] again.

[22] When the screen at the right is displayed, press [CHAN] key under "P1".

```
CH:I  SD.Indx = x.xx
P1    CIndx = x.xx
```

[23] Press [CHAN], [CHAN].

```
CH:I  Temp F = xx.x
P4    Den #01 = x.xx
```

NOTE

The 1120 Laser Printer uses only the densities of steps 7 through 15.

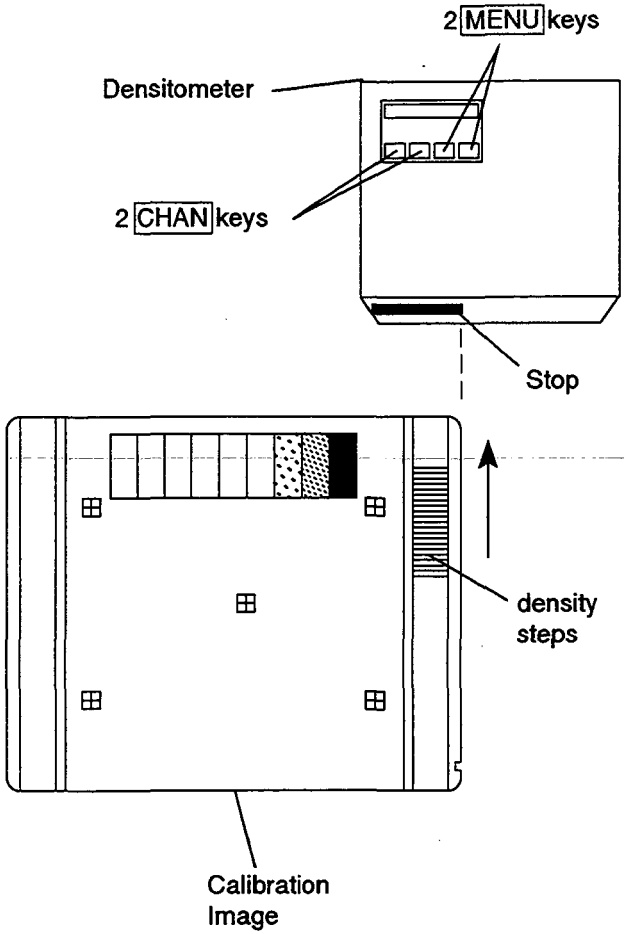
[24] Press the [CHAN] key on the right side of the Densitometer.

[25] Record the values for density steps 7 through 15.

[26] Verify by scrolling through density steps 7 through 15.

[27] Press both [MENU] keys simultaneously. The display returns to the Main Menu.

[28] To enter the values, go to step [29] on page 5-14.



H129_0102CCA
H129_0102CA

Entering Density Data Into the Printer

[29] After the Calibration Image has printed, the Laser Printer displays the message:

```
1C ENTER DATA
```

[30] Press [SELECT] to display the first gray step value.

```
ENTER STEP 1: X:XX
```

NOTE

The minimum density value that can be entered is 0.00, and the maximum density is 3.99.

IMPORTANT

Enter data steps beginning with the lowest value.

[31] To increase or decrease the density value for a step, press [▼] or [▲].

[32] To enter the density value and display the next density step press [NEXT].

[33] Perform steps [31] and [32] for all 9 gray steps.

[34] Verify that all values have been entered correctly by pressing [NEXT] and reviewing each of the 9 values.

Beginning the Calibration

[35] Press [SELECT].

```
1D BEGIN CALIBRATION
```

[36] Press [SELECT] again to begin the calibration.

```
  CALIBRATING
```

[37] Wait about one minute for the Printer to successfully compute the calibration table.

```
00 PRINTER READY
```

Calibration Errors

If calibration is unsuccessful, the Laser Printer displays an error message.

```
54 ERROR:CALIBRATION
```

[1] Verify the following:

- **(a)** The 9-step values have been entered correctly.
- **(b)** The Laser Printer and the Processor are warmed up completely.
- **(c)** The density values were entered in ascending order. The density of each step must be **greater than or equal** to the density of the **previous** step. If necessary, enter the values again.
- **(d)** Calibration Image was used and not the Test Image.

[2] Press [SELECT].

```
1D BEGIN CALIBRATION
```

[3] Press [SELECT] again to begin the calibration.

```
  CALIBRATING
```

[4] Wait about one minute for the Printer to successfully compute the calibration table.

```
00 PRINTER READY
```

[5] If the "Calibration Error" message is displayed again, repeat the procedure for "Calibrating - Creating a New Calibration Table" on page 5-8.

[6] If errors persist, contact your KODAK representative.

Tone Scaling

IMPORTANT

- Before a Tone Scale adjustment, verify that the Imaging Device Monitor has been properly adjusted. This Monitor adjustment should **NOT** be changed once the Tone Scaling has been completed.
- Tone Scale adjustments should **ONLY** be done by trained personnel. Consult your KODAK representative if you have questions.

Tone Scaling is a technique of making printed images match the images on the Imaging Device Monitor. To adjust the tone scale, do the following:

(1) Check that the Density is set for the desired maximum density. See the procedure "Calibrating - Using A Stored Table" on page 5-4.

(2) Calibrate the Printer. See the procedure "Calibrating - Creating a New Calibration Table" on page 5-8.

(3) Adjust the Curve Shape. See the procedure on page 4-6.

(4) Adjust the Contrast. See the procedure on page 4-11.

SECTION 6
Troubleshooting

Table of Contents

Description	Page
Access Mode	6-2
Using the Access Mode	6-2
Film Jams	6-4
Error Messages	6-4
Clearing a Film Jam	6-5
Errors	6-9
User-Correctable Problems	6-9
Keypad Error Messages	6-11
Printer Error Messages	6-12

Access Mode

Using the Access Mode

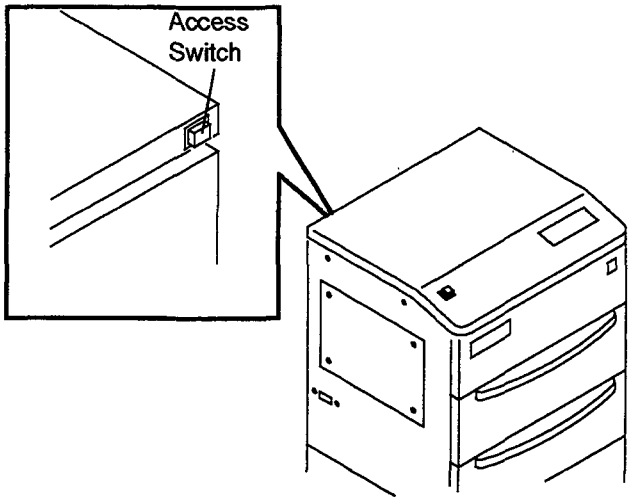
The Access mode allows entry to the Printer's imaging section for clearing film jams and servicing the unit. When the Access Switch is pressed, the Printer:

(1) closes the Magazine Windows to prevent fogging,
(2) turns off power to the imaging unit,
(3) unlocks the Magazine Doors.

NOTE

The Access Switch only functions when pressed after:

- a film jam, or
- a fatal error number 40 or higher is displayed.



H129_0031ACC
H129_0031AC

NOTE

When the Printer is in the Access mode, images can be stored and printed until the Printer's buffer is full.

Film Jams

Error Messages

If a film jam occurs, the error messages indicate the general location of the jam. Listed below are the film jam error messages.

[10] Jam occurred as the film was leaving the Supply Magazine area.

```
10 FILM JAM: SUPPLY
```

[11] Jam occurred in the upper area where the printing occurs.

```
11 FILM JAM: PRINTING
```

[12] Jam occurred in the Supply Magazine Window area.

```
12 FILM JAM: S-MAG
```

[13] Jam occurred in the Receive Magazine Window area.

```
13 FILM JAM: R-MAG
```

[14] Jam occurred as the film was entering the tunnel leading to the Processor.

```
14 FILM JAM: PROC
```

[15] Jam occurred in the Supply Magazine area.
Note: The sensors for number 10 and 15 error messages are very close together. The jam probably occurred in the same area.

```
15 FILM JAM: SUPPLY
```

[16] Jam occurred in the Receive Magazine area.

```
16 FILM JAM: RECEIVE
```

Clearing a Film Jam

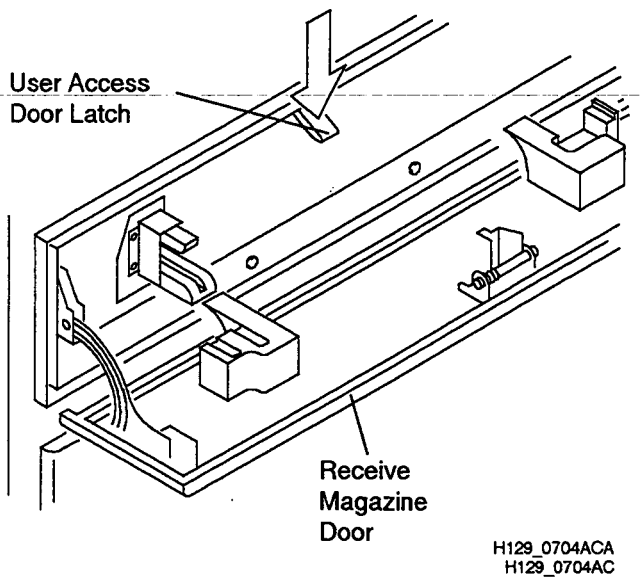
[1] Press the Access Switch to enter Access mode.

NOTE

Once the Access Switch has been pressed, the Printer does not load film or begin printing any film until Access mode is successfully exited.

[2] Open the Receive Magazine Door to gain access to the User Access Door Latch.

[3] Pull the User Access Door Latch down to open the User Access Door.

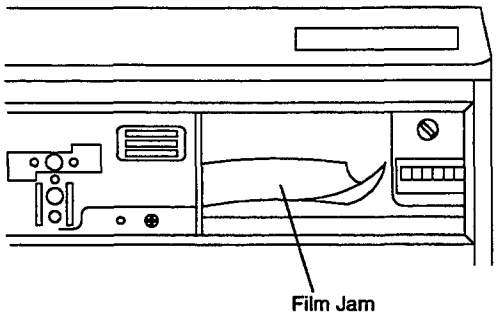


H129_0704ACA
H129_0704AC

[4] Locate the film jam.

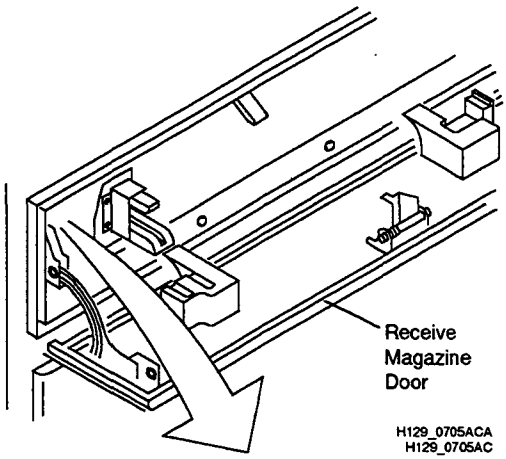
[5] If necessary, remove one or both of the film Magazines.

[6] If the jammed film is accessible from the right side, dislodge and remove the film.



H129_0706ACA
H129_0706AC

[7] The film jam may also occur on the left side.



H129_0705ACA
H129_0705AC

[8] If the jam occurred between the Laser Printer and the Processor:

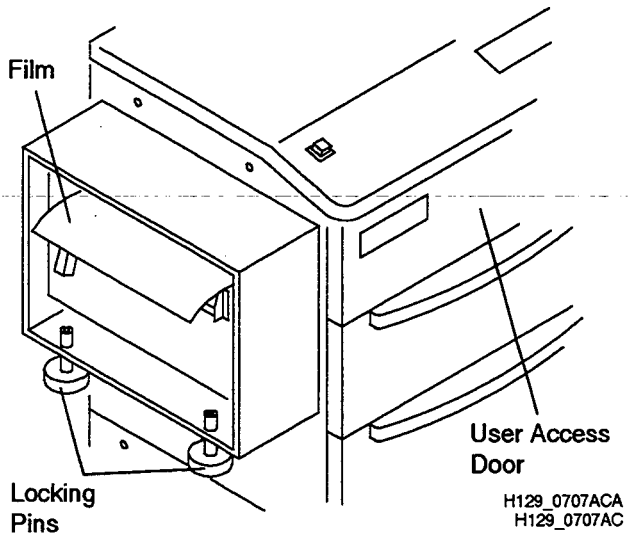
(a) Release the Processor Tunnel Locking Pins.

(b) Roll the Printer away from the Processor.

(c) Remove the jammed film.

(d) Align the 2 units.

(e) Insert the 2 Locking Pins.



[9] After the jam has been cleared:

(a) Close the User Access Door.

(b) Push the User Access Door Latch up.

(c) Insert any Magazines that were removed.

NOTE

If the Receive Magazine was removed, empty all film before inserting the Magazine into the Printer to record a correct count of the number of sheets in the Magazine.

(d) Close the Magazine Doors.

(e) Press the Access Switch.

Errors

User-Correctable Problems

Listed below are some user-correctable problems. If the problems persist after trying the suggestions, contact your KODAK representative.

Image Quality Problems

Black Film

If a portion of the processed film is black, fogging has occurred:

- Check the film supply by processing a film from the Supply Magazine.
- Check the "Film Handling" procedures. See page 3-5.
- Turn off the safelight.

Density Variations

If density variations occur:

- Check the Processor temperature.
- Check for new or contaminated chemicals in the Processor—adjust the Processor and re-calibrate.
- Check the film emulsion number and re-calibrate.
- Check the Window and Level settings. See page 4-4.

Light Maximum Density

If the maximum density (D-Max) on the Calibration Image is very light:

- Check for contaminated chemistry.
- The film may be loaded incorrectly. See "Loading Unexposed Film" page 3-9.

Static Marks

Static marks on the film indicate that the Receive Magazine was unloaded in a static environment.

- Consider using an anti-static mat when unloading the film.
- Do not wear shoes or clothing which may generate static artifacts (such as rubber soles, nylon, or silk).

Film Transport Difficulties

Double Film Feeds

If double film feeds occur, verify that the Supply Magazine is not overfilled.

"Supply Magazine Empty" Message but film is loaded in the Supply Magazine

Call your service representative.

Calibration Problems

Calibration Error

(1) Check that you are using the Calibration Image and not a Test Image.

(2) If you are using a Process Control Densitometer, check that only steps 7 through 15 of the gray scale are being entered.

(3) See "Calibration Errors" on page 5-15.

Keypad Error Messages

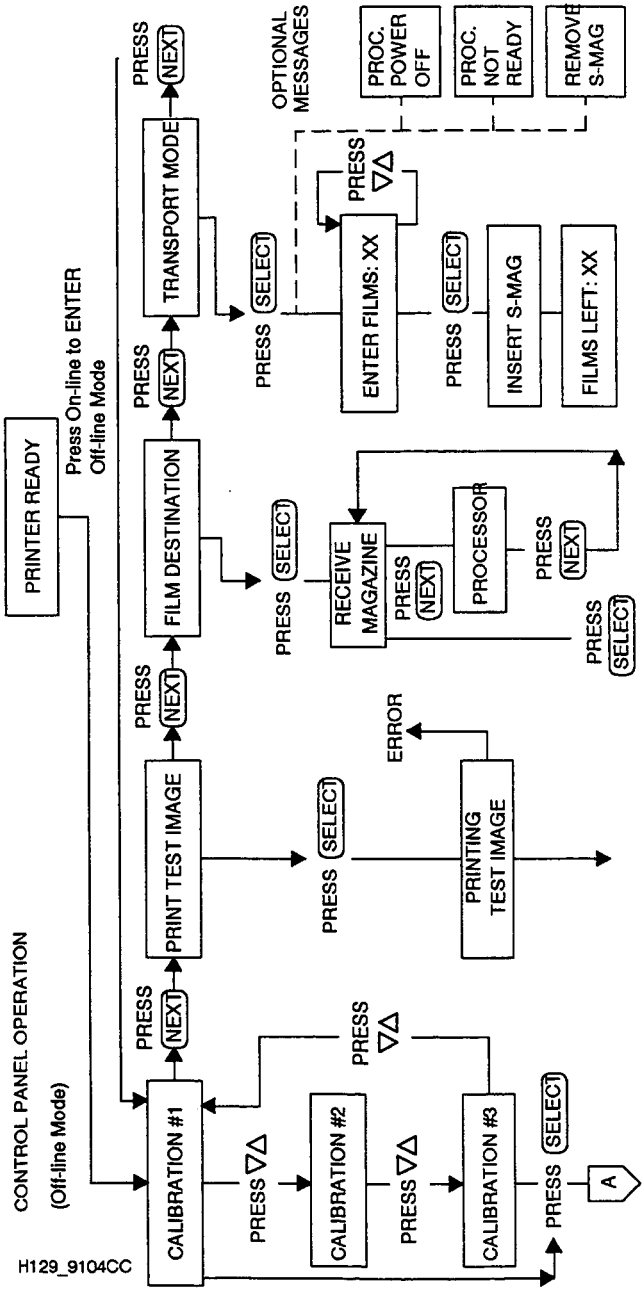
MESSAGE	COMMENTS
BUFFER FULL	Indicates that the memory for the Laser Printer is full. Check that the Laser Printer is printing pages. When memory becomes available again, the Keypad displays the message: "READY TO STORE IMAGE."
CHECK PRINTER	Check the message displayed on the Laser Printer for instructions.
CLEAR FILM JAM	See the Access and Clearing Film Jams sections of this manual.
INTERFACE ERROR	If this message appears on the top line of the Keypad Display, a Fatal Interface Error has occurred. Call your KODAK Representative to report the error. Turn the Printer on and off to reset.
	If this message appears on the bottom line of the Keypad Display, an image acquisition error has occurred. Attempt to store the image again.
MEMORY FULL	If this message appears, it indicates that the system cannot accommodate the requested function at this time. Wait until a page has printed and try again.
PRINTER ERROR	Indicates a Fatal Error for the Laser Printer. Check the Printer message display. Turn the Printer off and on to reset. If the error persists, call your Service Representative.
SERVICE MODE	Indicates that a Service Representative is servicing the Laser Printer or the Interface, **or** that the Control Terminal is being used. No action is necessary. The Keypad returns to its normal status after service is complete or, after the Control Terminal is no longer being used.
KEYPAD INACTIVE	Indicates that a Control Terminal is in use.
STORE POSITIONS FULL	Indicates that all image store locations are full. Press [Print] on the Keypad to print the page.

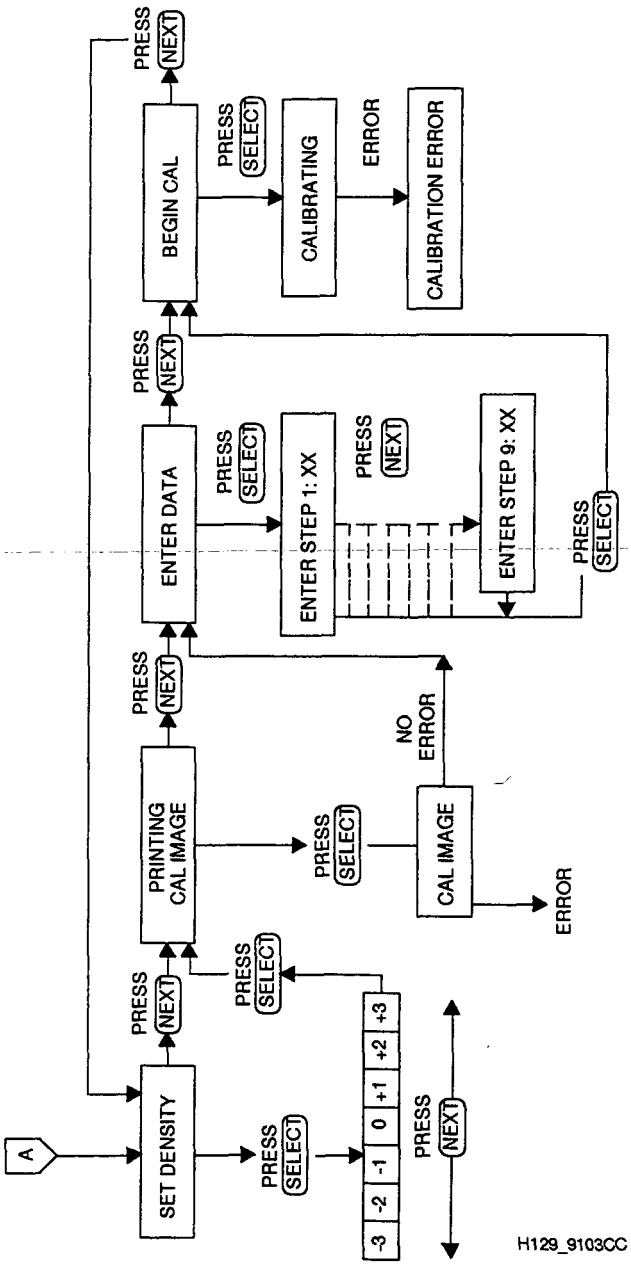
Printer Error Messages

MESSAGE	COMMENTS
03 FILM SUPPLY LOW	Fewer than 10 films remain in the Supply Magazine.
05 PROC POWER OFF	The power for the Processor has not been turned on.
06 QUIT NO DATA	The 9 steps of calibration data were not changed.
10 FILM JAM: SUPPLY	The jam occurred as the film was leaving the Supply Magazine area.
11 FILM JAM: PRINTING	The jam occurred in the upper area where the printing occurs.
12 FILM JAM: S-MAG	The jam occurred in the Supply Magazine Window area.
13 FILM JAM: R-MAG	The jam occurred in the Receive Magazine Window area.
14 FILM JAM: PROC	The jam occurred in the tunnel or as the film was entering tunnel leading to the Processor.
15 FILM JAM: SUPPLY	The jam occurred in the Supply Magazine area. Note: the sensors for number 10 and 15 error messages are very close together. The jam is probably in the same area.
16 FILM JAM: RECEIVE	The jam occurred in the Receive Magazine area.
19 ERROR: SUPPLY	Check that the plastic bag was removed from the film and the film was loaded correctly.
ERROR NUMBERS 40 and HIGHER	Any error message with a number of 40 or higher indicates a fatal error that must be resolved by service personnel. Note the number of the error message displayed and call your service representative.

SECTION 7
Control Panel Menu Flowcharts

The following pages contain menu flowcharts for the operations that you can perform using the Control Panel with the printer the in off-line mode.


CONTROL PANEL OPERATION
(Off-line Mode)
H129_9104CC
PRINTER READY
Press On-line to ENTER Off-line Mode
CALIBRATION #1
CALIBRATION #2
CALIBRATION #3
PRESS ▽△
PRESS SELECT
A
PRESS NEXT
PRINT TEST IMAGE
PRESS SELECT
PRINTING TEST IMAGE
ERROR
PRESS NEXT
FILM DESTINATION
PRESS SELECT
RECEIVE MAGAZINE
PRESS NEXT
PROCESSOR
PRESS NEXT
PRESS SELECT
PRESS NEXT
TRANSPORT MODE
PRESS SELECT
ENTER FILMS: XX
PRESS ▽△
PRESS SELECT
INSERT S-MAG
FILMS LEFT: XX
OPTIONAL MESSAGES
PROC. POWER OFF
PROC. NOT READY
REMOVE S-MAG


A
SET DENSITY
PRESS
SELECT
-3
-2
-1
0
+1
+2
+3
PRESS
NEXT
PRESS
SELECT
PRINTING
CAL IMAGE
PRESS
SELECT
CAL IMAGE
NO
ERROR
ERROR
PRESS
NEXT
ENTER DATA
PRESS
SELECT
ENTER STEP 1: XX
PRESS
NEXT
ENTER STEP 9: XX
PRESS
SELECT
PRESS
NEXT
BEGIN CAL
PRESS
SELECT
CALIBRATING
ERROR
CALIBRATION ERROR
H129_9103CC

BLANK PAGE

SECTION 8
Glossary

artifact: An identifiable error in image quality.

autofilming: A method of controlling the Laser Printer using the console of the Imaging Device and the Serial Control Link.

autoprint: An option that sends a page into the print queue automatically when the page is filled with images.

beam (laser): A concentrated stream of light wave energy that is unidirectional and coherent.

blackbone: A reverse clinical image.

buffer: A memory structure allocated for the temporary storage of image data.

density: The degree that a medium, such as a film negative, cannot be penetrated by light.

densitometer: A device used to measure the optical density.

fogging: Image artifact usually resulting from a improper handling of unexposed film.

formats - customer selectable: Output film presentations that are determined by:
- the amount of image memory installed in the Laser Printer.
- the film size, which is established by the Supply Magazine.
- the image parameters of each Input Section.

LED: Light Emitting Diode. A commonly used light source that glows when supplied with a specified voltage.

LCD: Liquid Crystal Display. A highly visible way to make letters and numbers appear by reflecting light on a special crystalline substance.

initialize: To place a hardware or software system into a known state.

interpolation: A method by which pixels are inserted between existing pixels in an image. The 2 methods used in the Laser Printer are replication and cubic spline.
In **replication**, the density code value for each new pixel inserted between 2 existing pixels is simply the same density value as of one of the 2 existing pixels.
In the **cubic spline** method, one or more new pixels are inserted between 2 existing pixels with density code values calculated from a mathematical curve. This mathematical curve is computed from the density code values of several nearby existing pixels.

parameter: A variable that temporarily assumes the properties of a constant.

resolution: A term used to describe the amount of information in an image.

tone scaling: A technique of making printed images match the images on the Imaging Device Monitor.

windows: Opening in the Magazines that allow access to the film.

SECTION 9
Index

[A]

Access:
- Mode, 6-2.
- Switch, 2-5.

Audio Options, 4-16.
Autofilming, 2-6, 8-1.
Autoprint, 4-7, 3-24.

[B]

Basic Operations:
- Deleting Images, 3-25.
- Deleting Pages, 3-25.
- Information Saved, 3-3.
- Film Handling, 3-5.
- Shut Down, 3-2.
- Start Up, 3-2.
- Storing Images, 3-18.
- Printing Images, 3-18.

Blackbone, 3-24.

[C]

Calibration:
- Creating a New Calibration Table, 5-8.
- Errors, 5-15, 6-10.
- Image, Printing, 5-10.
- Overview, 5-2.
- Using A Stored Table, 5-4.
- When to, 5-2.

Clearing a Film Jam, 6-5.
Component Overview, 2-4.
Control Panel, 2-4.

Configuration:
- Audio Options, 4-16.
- Autoprint, 4-7.
- Entering the "Configuration Options" Menu, 4-15.
- Rotation Options, 4-18.

Contrast Option, 4-11.
Control Panel, 2-4.
Curve Shape, 4-6.

D

Deleting:
- Images, 3-25.
- Pages, 3-25.

Density Data:
- Entering Into the Printer, 5-14.
- Measuring, 5-11.

Densitometer:
- Using 5-11.
- Using the KODAK Process Control, 5-12.

D-Max, 4-12
D-Min, 4-12

E

Errors:
- Calibration, 5-15, 6-10.
- Messages:
  - Keypad, 6-11.
  - Film Jam, 6-4.
  - Printer, 6-12.
- User-Correctable Problems, 6-9.

Exposed Film, Unloading, 3-14.

F

Film Handling, 3-5.
- Loading Unexposed Film, 3-9.
- Overview, 3-5.
- Unloading Exposed Film, 3-14.

Film Jam:
    Clearing, 6-5.
    Error Messages, 6-4.
Film Transport Difficulties, 6-10.
Footswitch, 2-12.
Film Restraints, 3-9.
Formats:
    Overview, 3-19.
    Special Format F1, 3-20.
    Special Format F2, 3-22.
    Standard Formats, 3-19.

I

Image:
    Calibration, 5-10.
    Deleting, 3-25.
    Printing, 3-18.
    Quality, 6-9.
    Storing, 3-18.
Interpolation Types, 4-9.

K

Keypad:
    Auxiliary, 2-9.
    Overview, 2-6.
    Error Messages, 6-11.

L

Level, 4-5.
Loading Unexposed Film, 3-9.

M

Magazine:
- Loading Unexposed Film, 3-9.
- Open/Close Switch, 2-4.
- Unloading Exposed Film, 3-14.

Measuring Density Data:
- Using a Densitometer, 5-11.
- Using the KODAK Process Control Densitometer, 5-12.

Menus:
- Configuration Options, 4-15.
- Contrast Option, 4-11.
- Print Options, 4-9.

N - O

Number of Copies, 3-24.

Options:
- Audio, 4-16.
- Contrast, 4-11.
- Print, 4-9.
- Rotation, 4-18.

P

Pages, Deleting, 3-25.

Position Store Keys, 3-18.

Print Options, 4-9.

Print Options Menu, Entering, 4-9.
- Entering the "Contrast Option" Menu, 4-11.
- Entering the "Print Options" Menu, 4-9.
- Interpolation Types, 4-9.

Print Pages, 3-24.

Printer Messages, 6-12.

Printing the Calibration Image, 5-10.

Product Overview, 2-1.
- Component Overview, 2-4.
- General, 2-2.

Program Options:
- Configuration, 4-15.
- Overview, 4-3.
- Print Options, 4-9.
- Window Options, 4-4.

Q - R

Quality, Image, 6-9.
Reverse Image Setting, 3-24.
Roomlight Magazine, 3-9.
Rotation Options, 4-18.

S

Safety Information, 1-1.
Special Format F1, 3-20.
Special Format F2, 3-22.
Standard Formats, 3-19.
Storing Images and Printing Images:
- Autoprinting, 3-24.
- Formats, 3-19.
- Number of Copies, 3-19.
- Position Store Keys, 3-18.
- Print Pages, 3-24.
- Reverse Image Setting, 3-19.
- Storing Images, 1-1.

Switch:
- Access, 2-5.
- Magazine Open/Close, 2-4.

T

Tone Scaling, 5-16.
Transport Mode, 3-16
Troubleshooting:
- Access Mode, 6-2.
- Calibration, 6-10.
- Clearing a Film Jam, 6-5.
- Errors, User-Correctable 6-9.
- Film Jam Error Messages, 6-4.
- Film Transport Difficulties, 6-10.
- Image Quality, 6-9.
- Keypad Error Messages, 6-11.
- Printer Error Messages, 6-12.
- User-Correctable Problems, 6-9.

U

Unexposed Film, Loading, 3-9.
User-Correctable Problems, 6-9.

W

Width, window, 4-4.
Window Options:
- Curve Shape, 4-6.
- Level, 4-5.
- Overview, 4-4.
- Width, 4-4.

SECTION 10
Publication History

Rev. Date	Pub. No./ ECO No.	Affected Pages	File Name	Notes
31OCT95	5B9620/ 2646-026	1, 3 - 5, 1-1 - 1-2, 4-1, 4-2, 4-18 - 4-32, 6-9, 9-1, 9-2, 9-4 - 9-6, 10-1, 10-2	3226cm_b.txt	Software Update

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Part No. 699601
3/94

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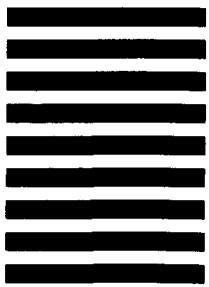

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How long have you been working at this position? _____

What Kodak product/system do you have? _____

Manual Title _____

I rate this manual as follows:	Excellent	Good	Fair	Poor
As an aid in the training process.	[ ]	[ ]	[ ]	[ ]
As an aid for on-the-job reference.	[ ]	[ ]	[ ]	[ ]
Organization	[ ]	[ ]	[ ]	[ ]
Comprehension	[ ]	[ ]	[ ]	[ ]
Illustrations	[ ]	[ ]	[ ]	[ ]
Overall rating of the manual:	[ ]	[ ]	[ ]	[ ]

I found errors: **Page No.** **Description**

_____ | _____

_____ | _____

_____ | _____

What did you like the best about this manual?

_____

_____

What would you like to see changed in this manual?

_____

_____

Additional comments or suggestions:

_____

_____

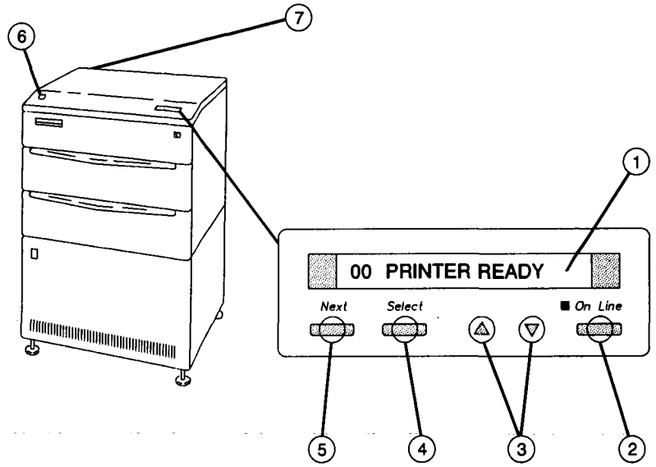
_____

_____

Name _____ Date _____

Company _____

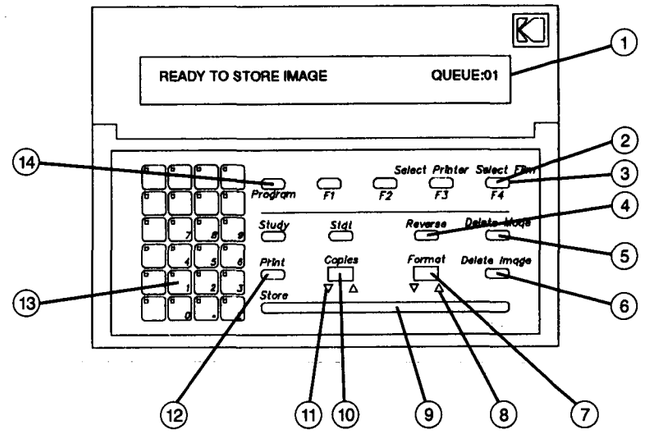
Control Panel



Key

(1) Message Display
(2) On Line
(3) Arrows
(4) Select
(5) Next
(6) Magazine Open
(7) Access (not shown)

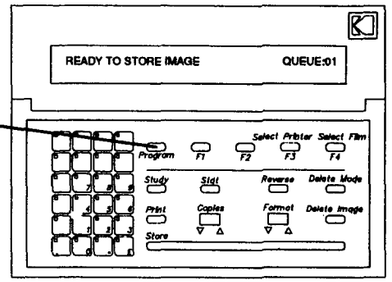
Keypad



Key

(1) Message Display
(2) Select Film
(3) Function Keys F1 through F4
(4) Reverse
(5) Delete Mode
(6) Delete Image
(7) Format
(8) Format ∧ and ∨ Arrows
(9) Store Bar
(10) Copies
(11) Copies ∨ and ∨ Arrows
(12) Print
(13) Numeric Keypad
(14) Program

"Program" Key Options



PROGRAM OPTIONS

F1	Window Options	F2	Print Options
F3	Unavailable	F4	Configuration

F1 WINDOW OPTIONS

F1	Window Width	F2	Window Level
F3	Curve Shape	F4	Curve Series

F2 PRINT OPTIONS

F1	interpolation	F2	Border Options
F3	Unavailable	F4	Contrast Options

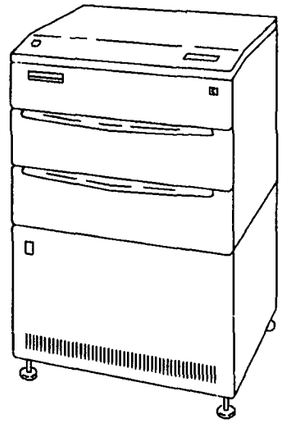
F1	Contrast	F2	Image D-min
F3	Image D-max	F4	Border D-max

F4 CONFIGURATION

F1	Auto Print	F2	Audio Options
F3	Unavailable	F4	Rotation Options

Publication No. 4B4857
5/94
Supersedes 968354
2/92

QUICK REFERENCE GUIDE
for the
KODAK EKTASCAN 1120 Laser Printer



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☐ Read the Error History and Error Frequency Logs. Look for trends and possible problems. Clear both logs.

☐ Print test patterns. Compare to test patterns made at installation. Check for artifacts.

CAUTION

Do not touch the POLYGON MIRROR surface.

☐ If artifacts show on the film, clean the OUTPUT MIRROR and LENSES with spectro grade ACETONE, Cat. No. 116-8277 and LENS PAPER TL-1216.

☐ If necessary, calibrate the LASER PRINTER using the procedure on page 4-2.

☐ Use a soft cloth to clean the surfaces of the 2 film SUCKERS.

☐ Use alcohol to clean the following rollers:

UPPER TRANSPORT ROLLER

LOWER TRANSPORT ROLLER

RECEIVE ROLLER

SUPPLY ROLLER

PINCH ROLLER

☐ Clean or replace the following filters:

IMAGING UNIT INTAKE FAN FILTER, located under the SUPPLY MAGAZINE.

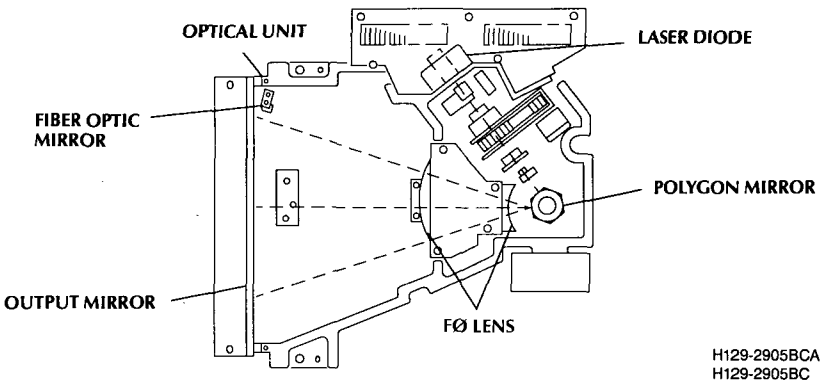
CARD RACK INTAKE FILTER

FRONT COVER FILTER

☐ Clean the SLOW SCAN MOTOR FAN COVER.

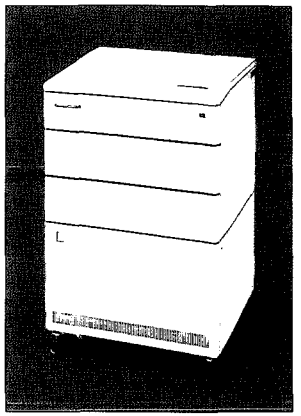
WARNING

LASER RADIATION WHEN OPEN. AVOID DIRECT EYE EXPOSURE.



H129-2905BCA
H129-2905BC

Preventive Maintenance Checklist



HEALTH SCIENCES

The new vision of Kodak

Comments/Suggestions: _____

_____

_____

_____

_____

Customer Information

Name: _____

Address: _____

Department/Location: _____

City: _____ State: ____ Zip: _____

Key Contact: _____

Laser Printer "K" Number: _____

FE Name: _____ **Date:** _____

Health Sciences Division
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Rochester, New York 14650

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